

**Wal-Mart**

# **The Continuing Evolution of Sustainable Facilities for Wal-Mart in the US**

**Charles R. Zimmerman, P.E.  
VP of Prototype and New Format Development**

**Corporate Strategy & Business Sustainability**

Wal-Mart

START YOUR OWN HEDGE FUND • THE FUTURE OF COMPUTING

# FORTUNE



**WAL-MART  
SAVES  
THE  
PLANET**

Well, not quite.  
But CEO **LEE SCOTT**'s  
green campaign,  
which started as PR,  
is becoming  
a force of nature.

*"What I  
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DISPLAY UNTIL AUGUST 14, 2006

\$4.99US \$5.99CAN 32>

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www.fortune.com (AOL Keyword: Fortune)

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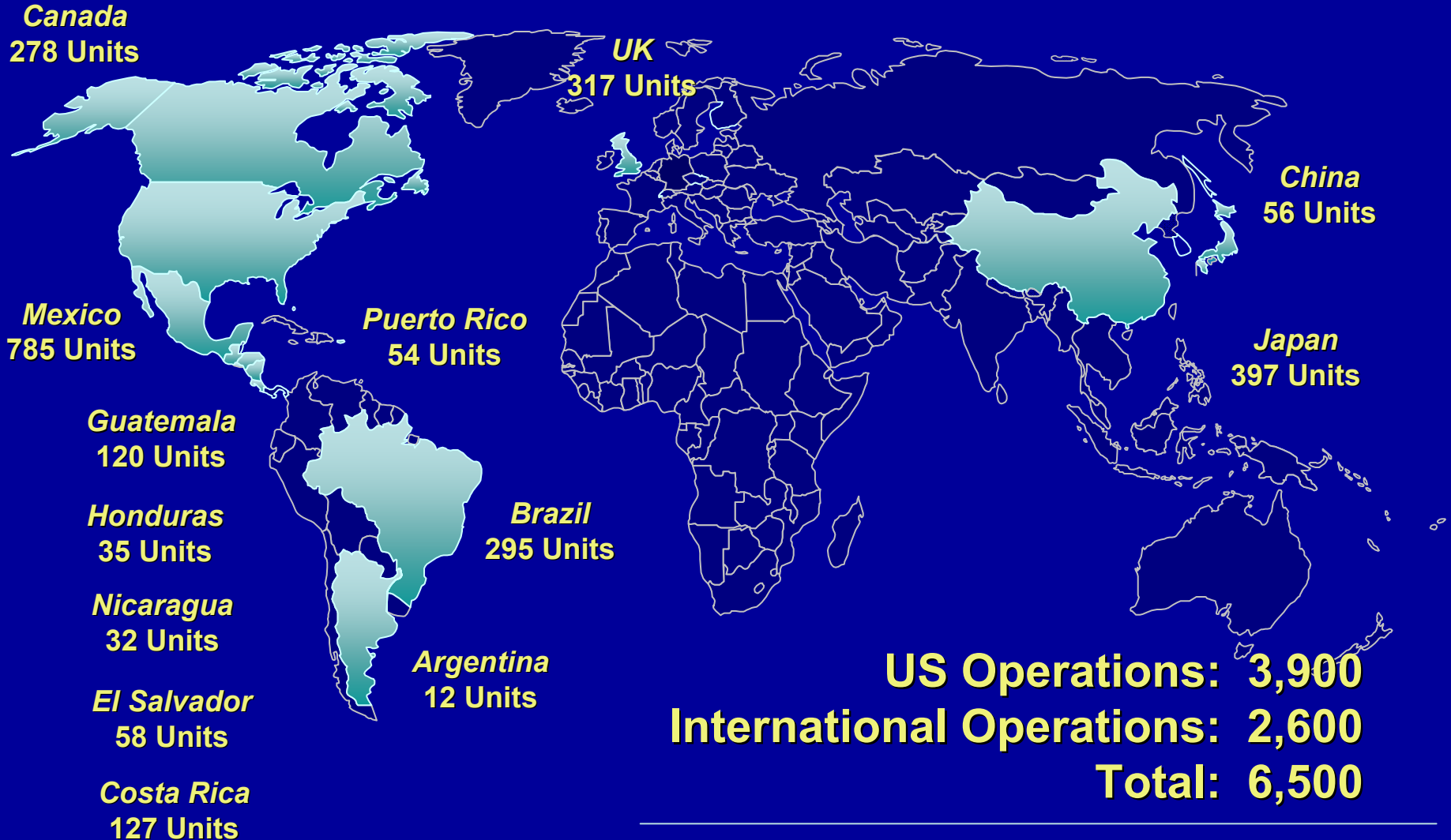
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# Global Presence – 2006

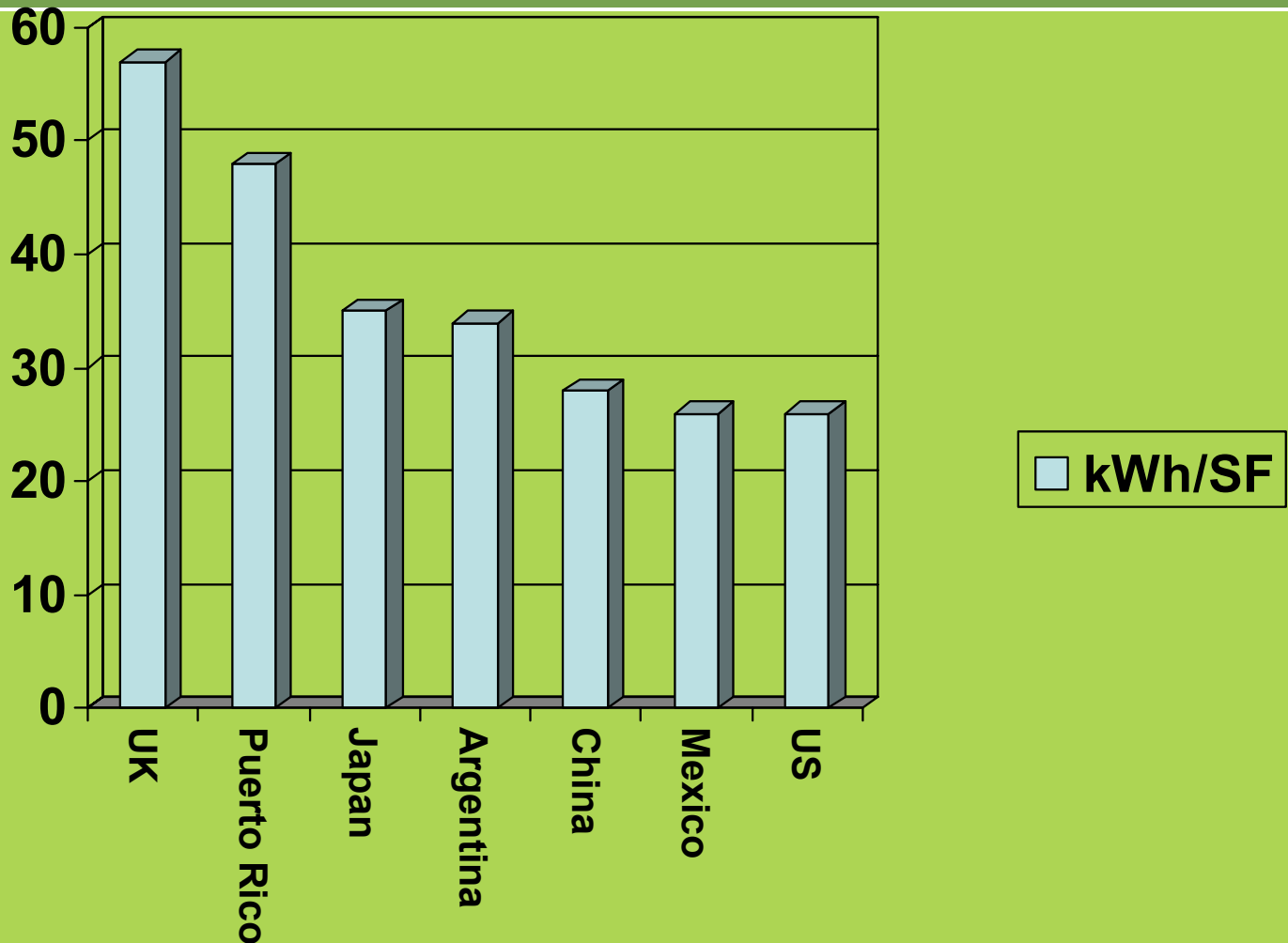


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**Annual Sales: \$312.9 B**

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# *Estimated* Kwh/SF



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**Why is US W/M so efficient?**

**Every Day Low Cost  
(EDLC)**

**=**

**Every Day Low Price  
(EDLP)**

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# **Lee Scott Quote**

**“We will not be measured  
by our aspiration; we will  
be measured by our  
action” – Lee Scott, July  
12, 2006**







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# Daylight Harvesting

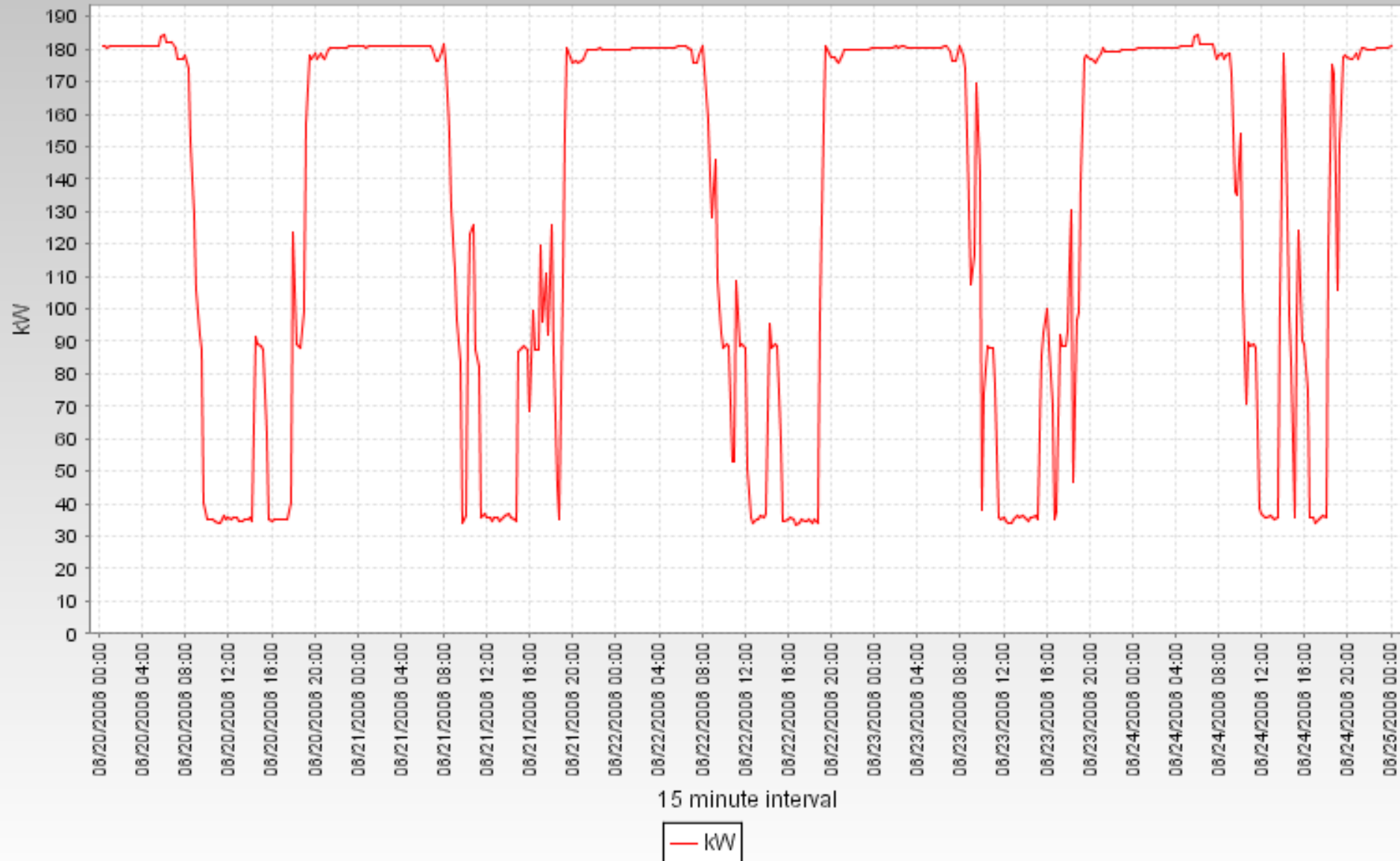


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# Lighting: 15 Minute Data: KW

[06/20/2006 00:00 - 06/25/2006 00:00]

/Stores & DCs/Enenwise Stores/Enenwise #2688



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# Interior with Sales Floor lighting in “full off” mode

**10 years**

**2,100 stores**

**330 million SF**

**49% less  
wattage than  
ASHRAE 90.1**



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# "Our Roof Is Cool!"

- Steve Youngs  
Wal-Mart



Wal-Mart has stopped their business electricity costs from going through the roof. You can too!

The state of California has \$21,000,000 in cash rebates now available to California businesses that replace their old roofs with new, white, energy-efficient roofs. New construction projects are also eligible.

San Diego  
REGIONAL  
ENERGY  
OFFICE



For details (LADWP Customers)  
call 1-800-GreenLA (1-800-473-3652)  
or log onto [www.GreenLA.com](http://www.GreenLA.com)  
or (All Others)  
1-866-SDENERGY (1-866-733-6474)  
or log onto [www.sdenergy.org/coolroof](http://www.sdenergy.org/coolroof)

Flex  
your  
POWER

Brought to you by the California Energy Commission as another way to "Flex Your Power"

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# Heat Reclaim



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# **Current Efficiency Items**

- **Daylight Harvesting**
- **“Cool” roofing**
- **Heat Reclaim**
- **High Efficiency HVAC (EER - 11-13)**
- **Centralized EMS/Monitoring**
- **Active De-humidification**
- **Exterior LED Signage**

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# Exterior LED lit Signage



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# **Favorite Quote**

**“I have traveled extensively visiting retail in North America, Central America, South America, Europe and Asia. I can honestly say that in my opinion the stores Wal-Mart builds today in the US are the most energy efficient of any I have ever seen anywhere in the world” -**

***Charles Zimmerman***

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# Goals

- **20% Energy/GHG reduction in existing stores within 7 years**
- **30% Energy/GHG reduction for new prototype within 4 years**

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Lunch Meat

Cheese

ese

Shredded Cheese

Shredded Cheese

Lunch Meat

Lunch Meat

Lunch Meat

Lunch Meat

Lunch Meat

Lunch Meat

Lunch Meat

CONDENSING

Condensation (water) from air conditioning systems is usually a waste byproduct, but in this Supercenter, the condensation from the store's refrigeration and air conditioning systems is collected in the pond on the east side of the store and used to help irrigate the plants.





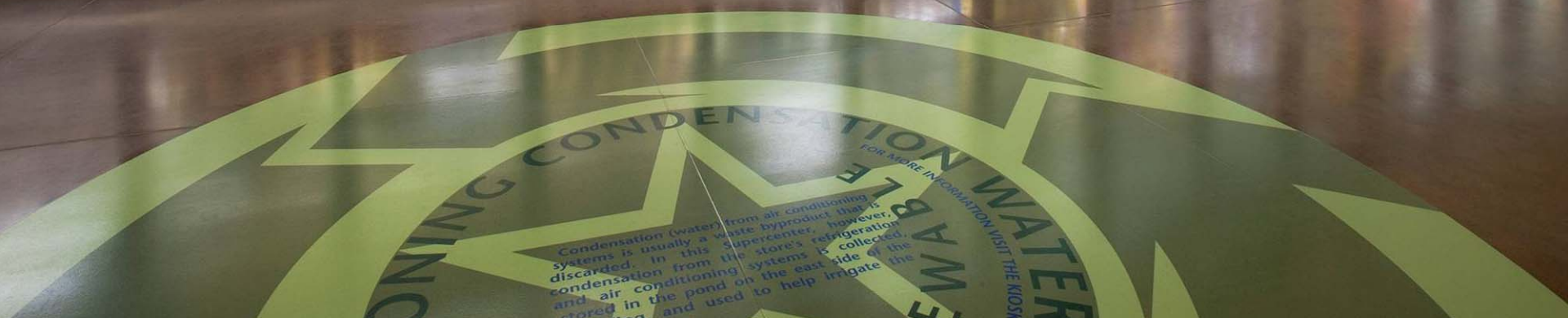


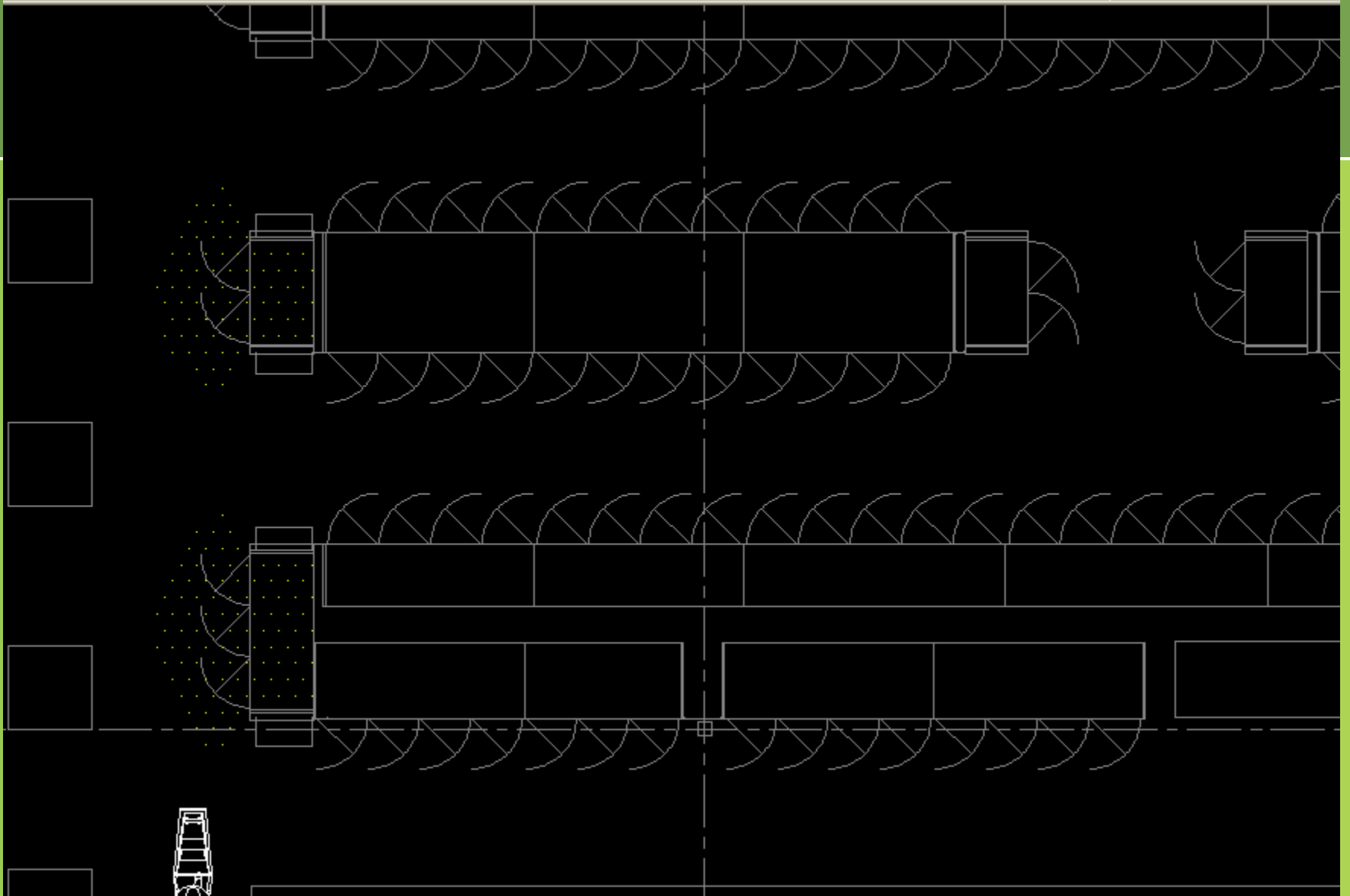


Lunch Meat



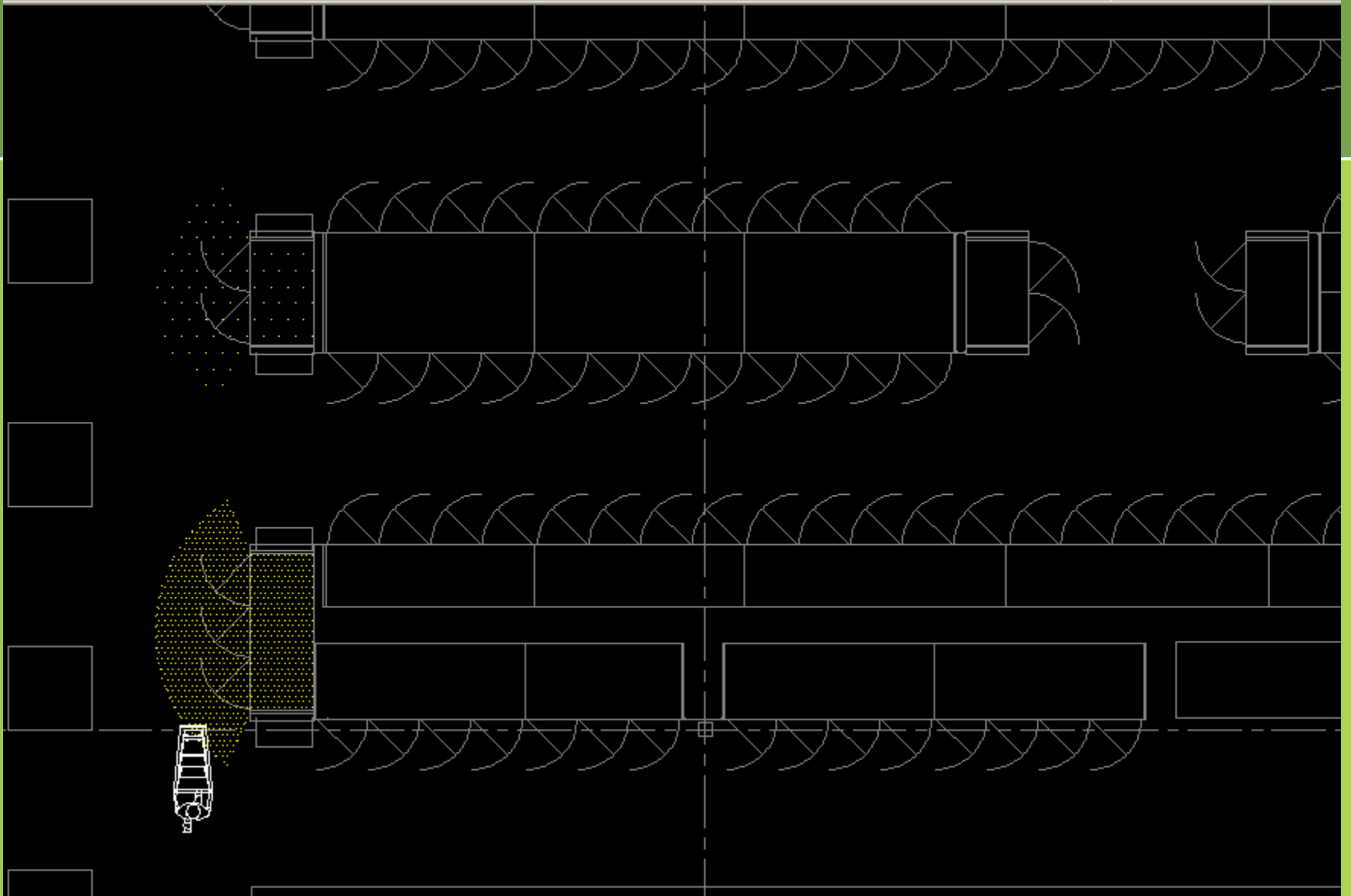
Cheese



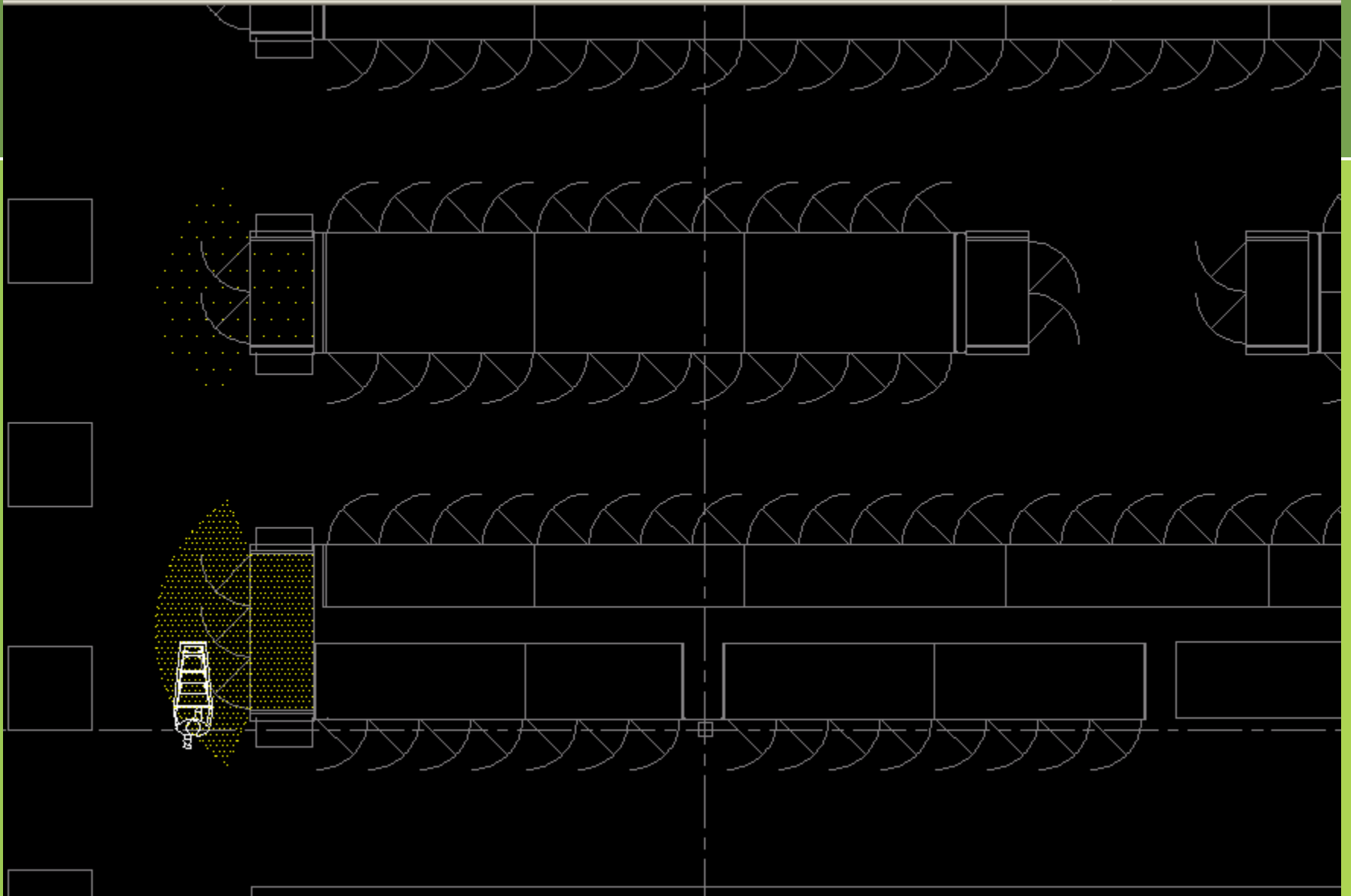


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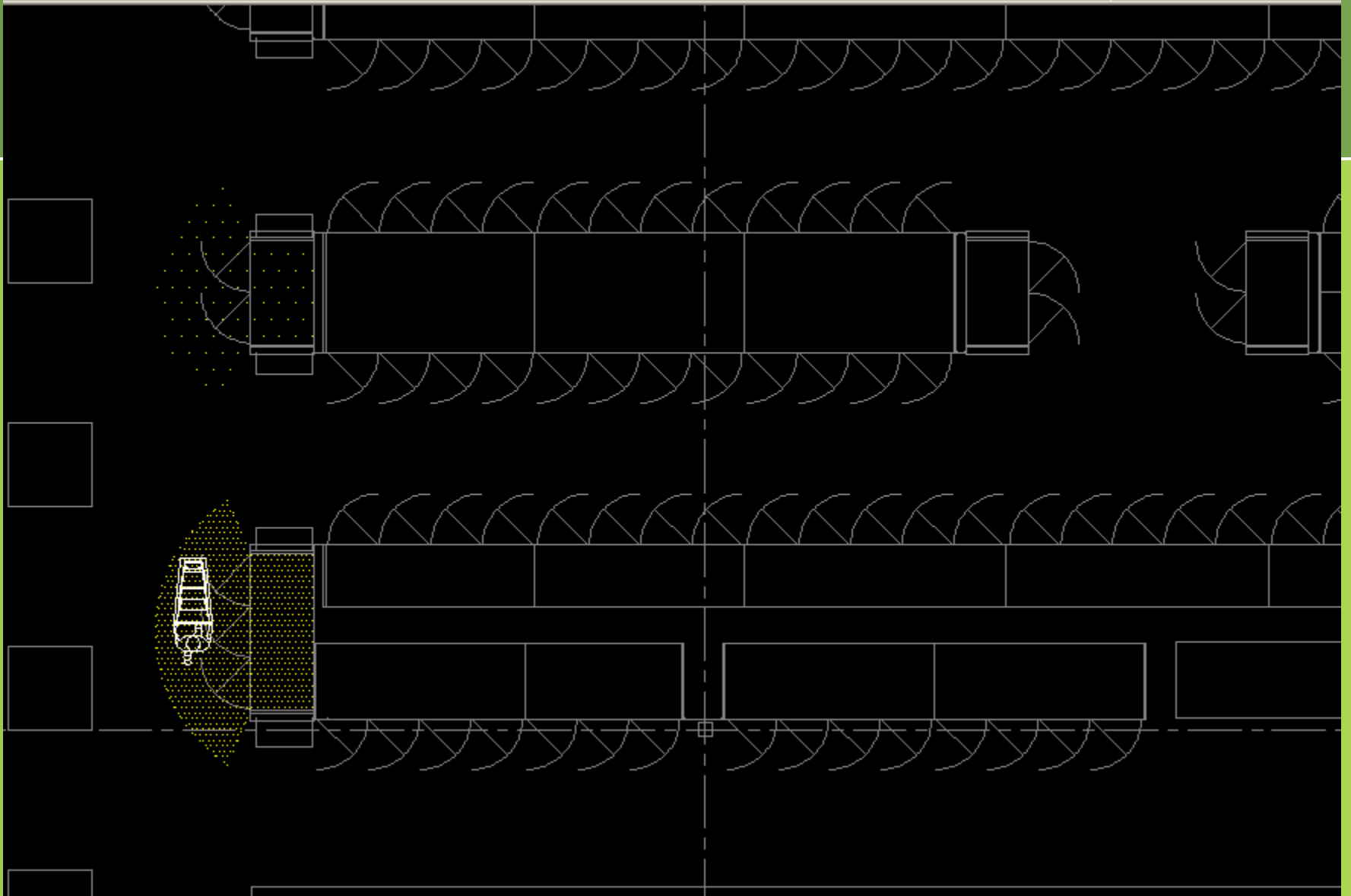




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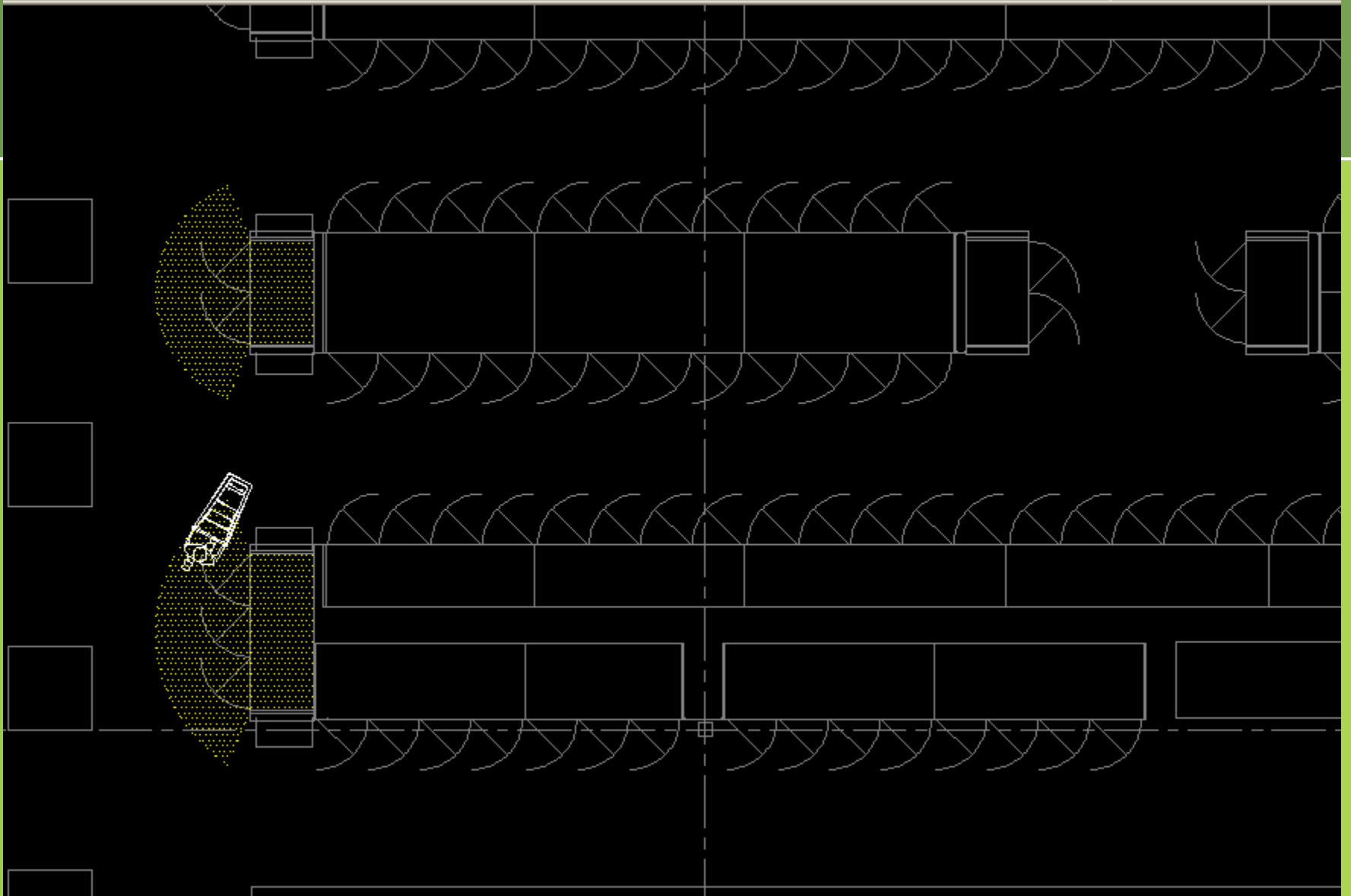


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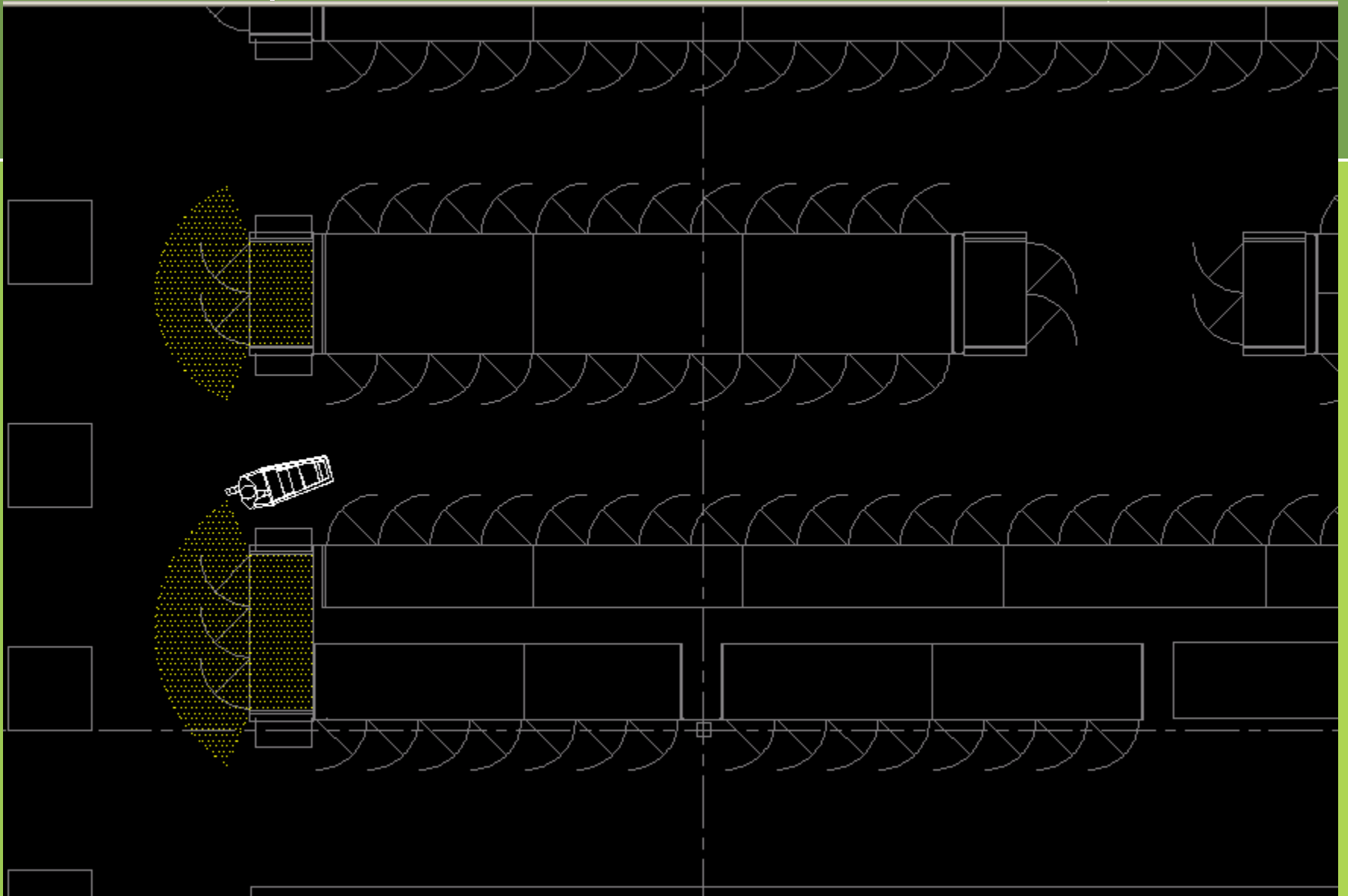


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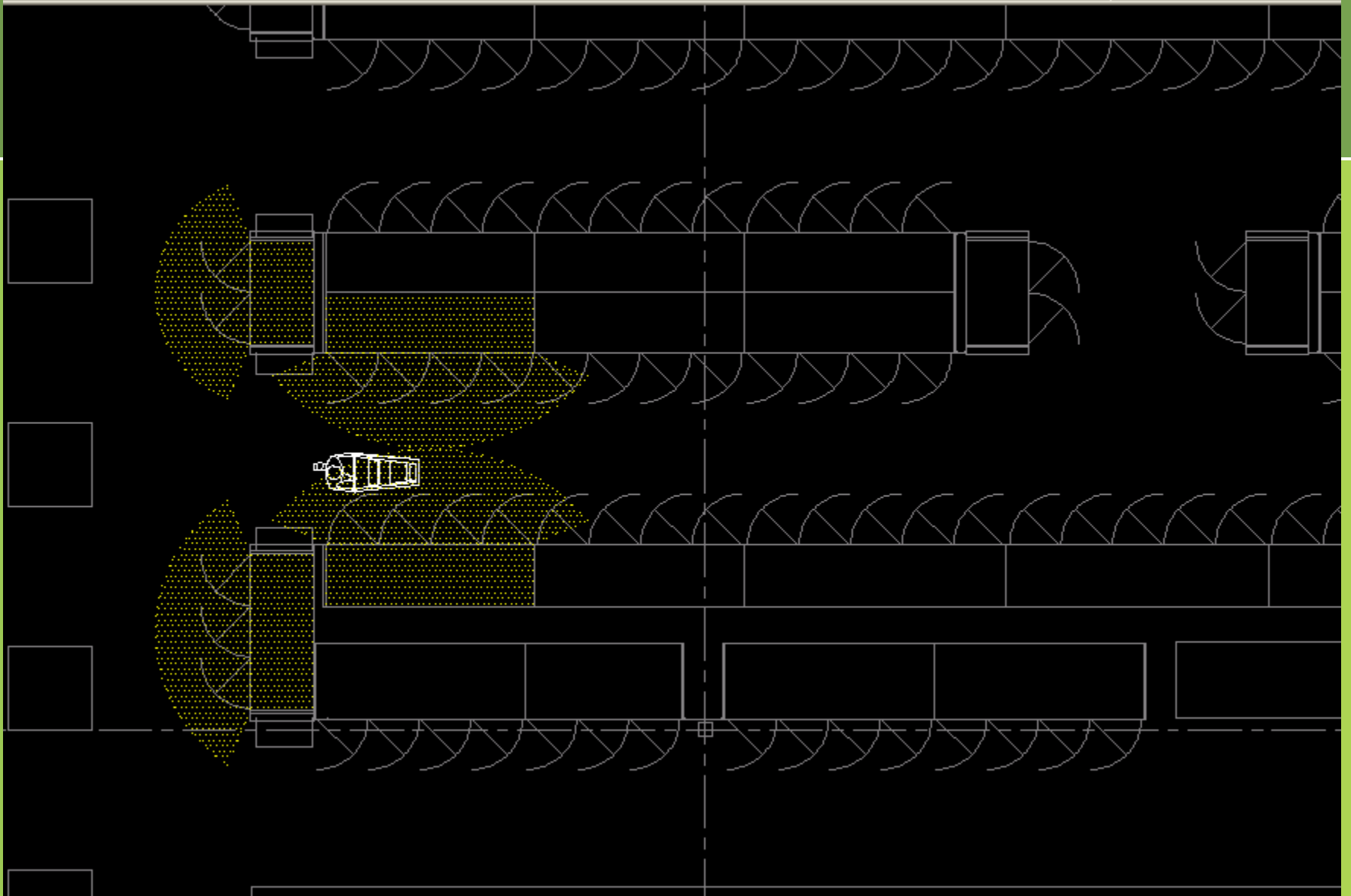




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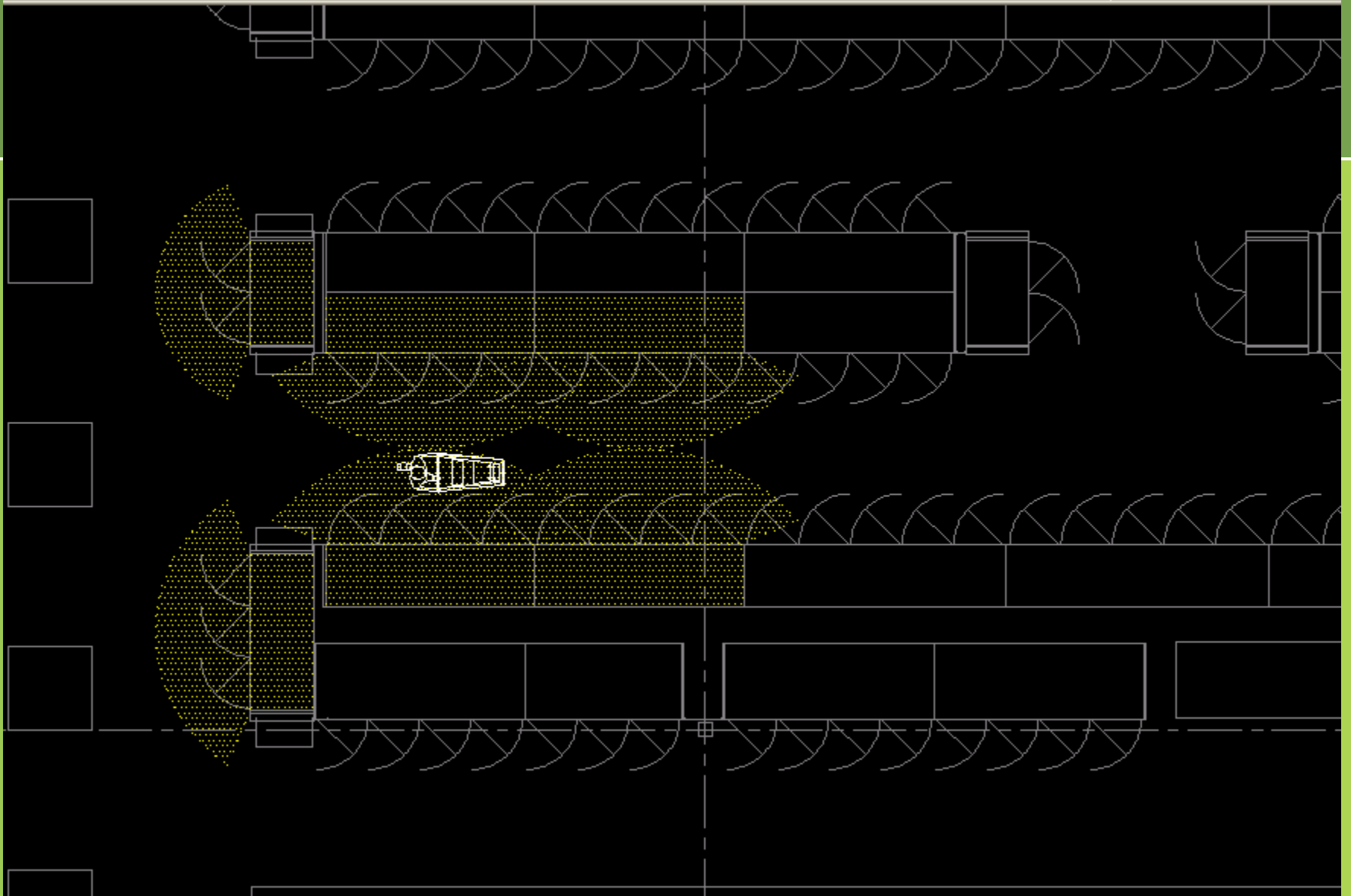


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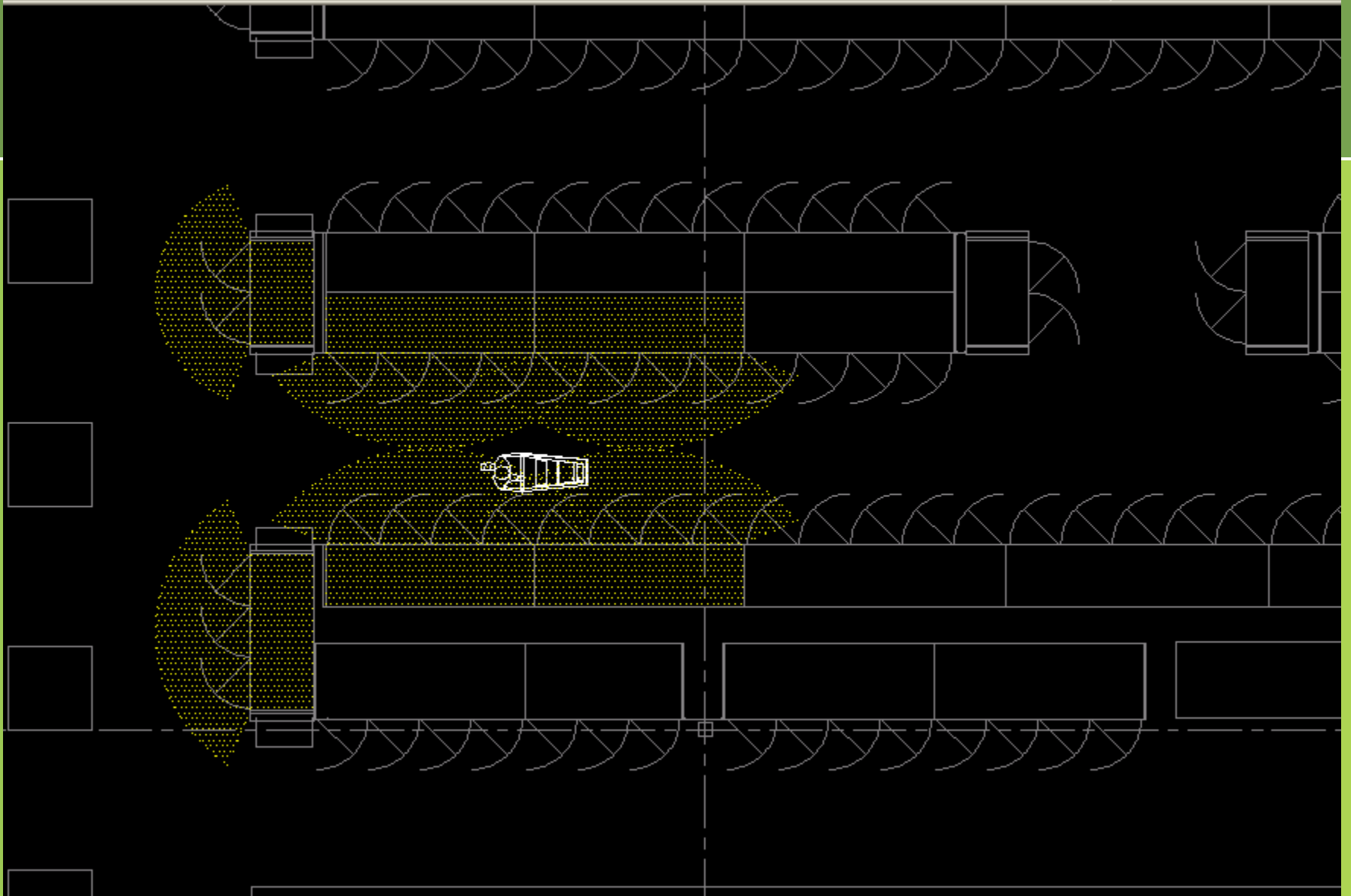


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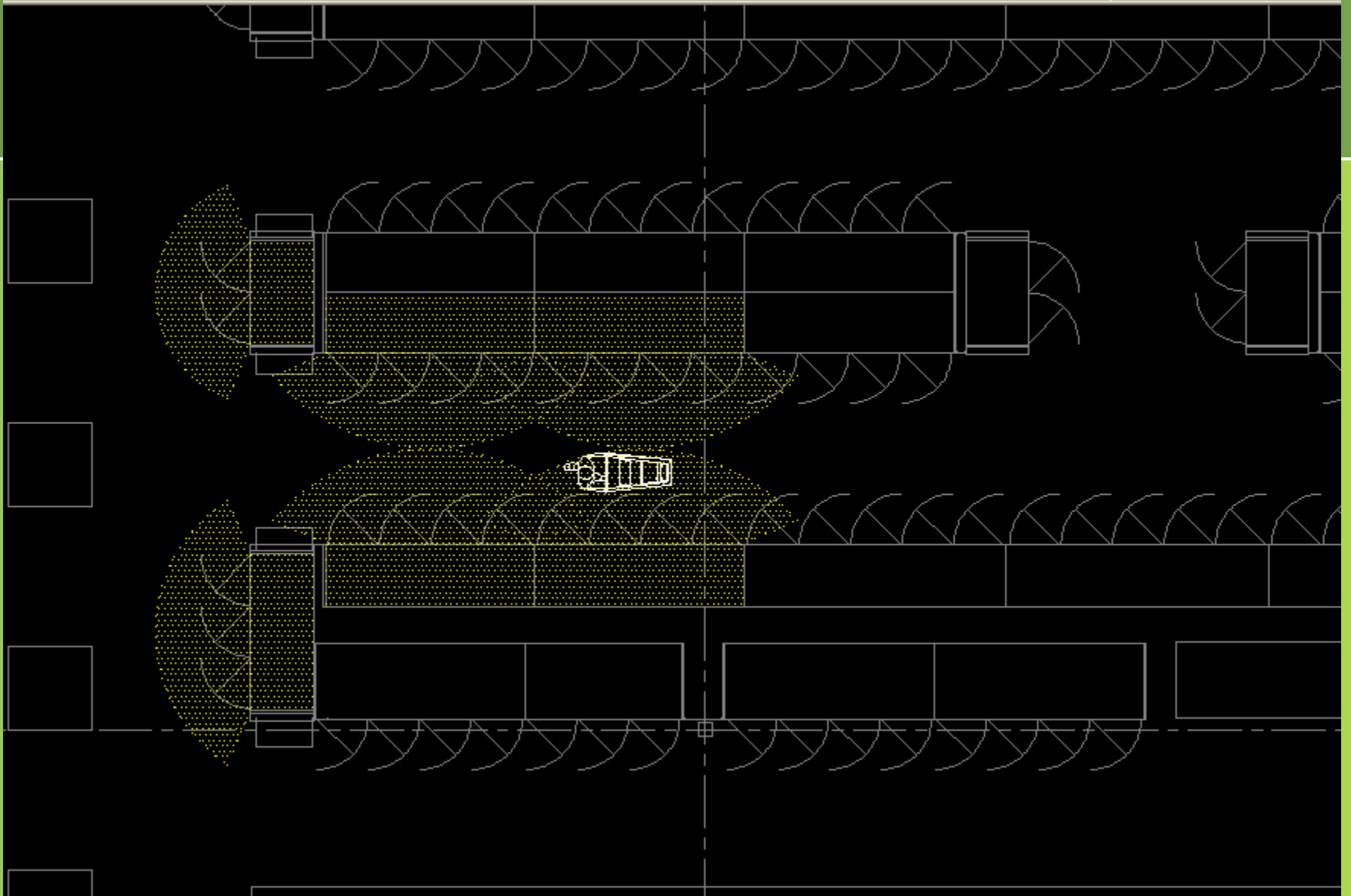




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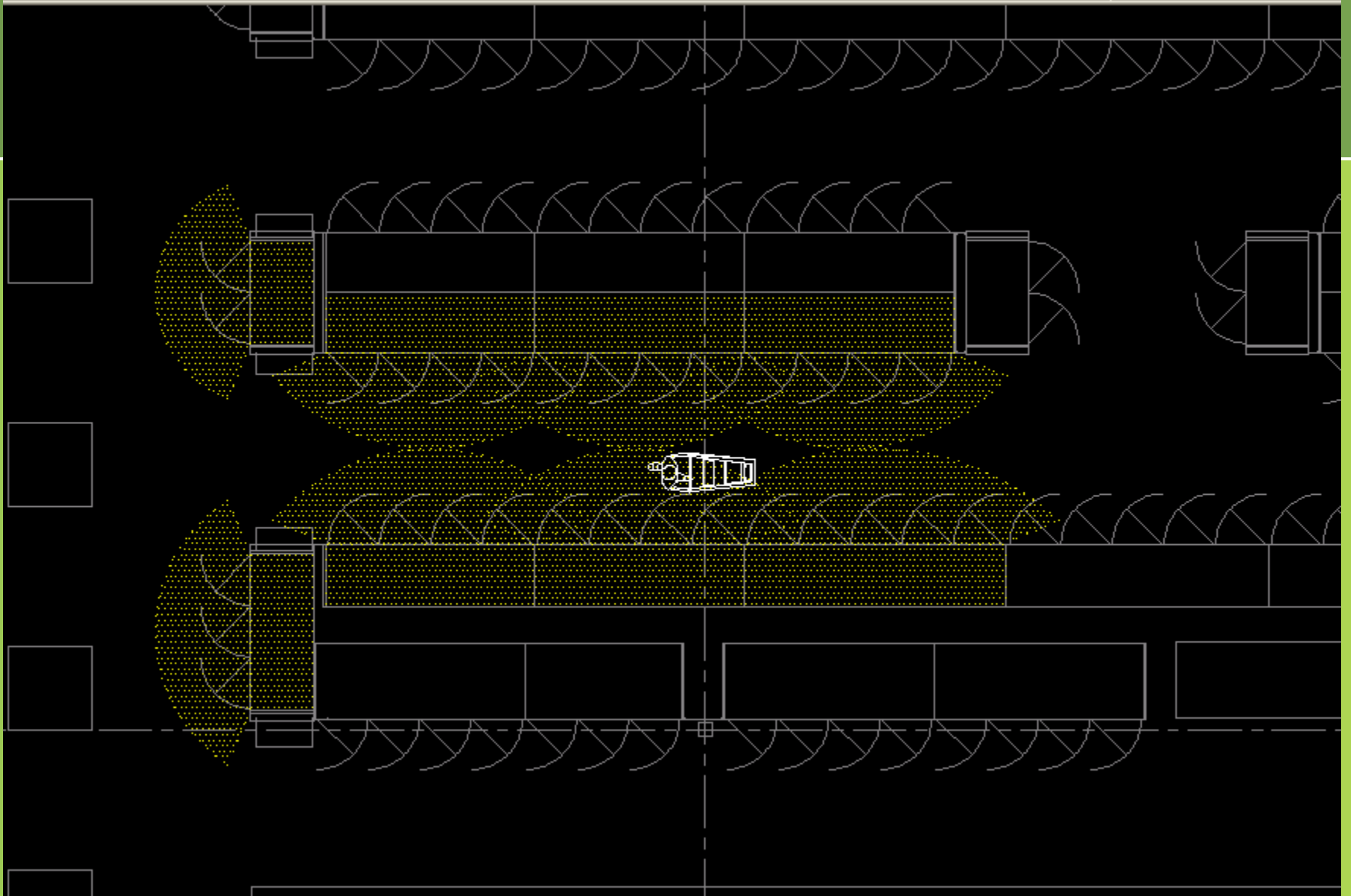


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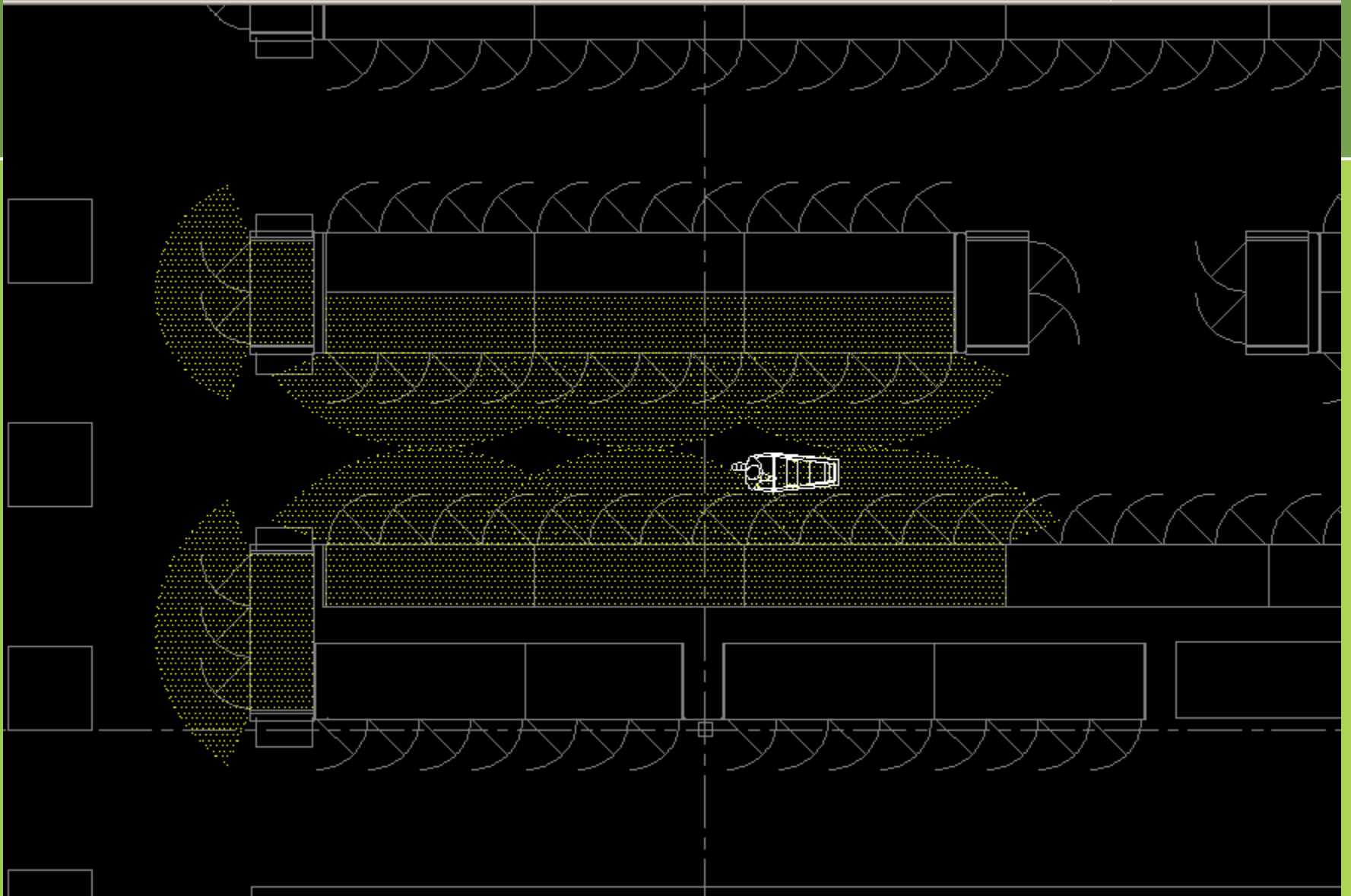


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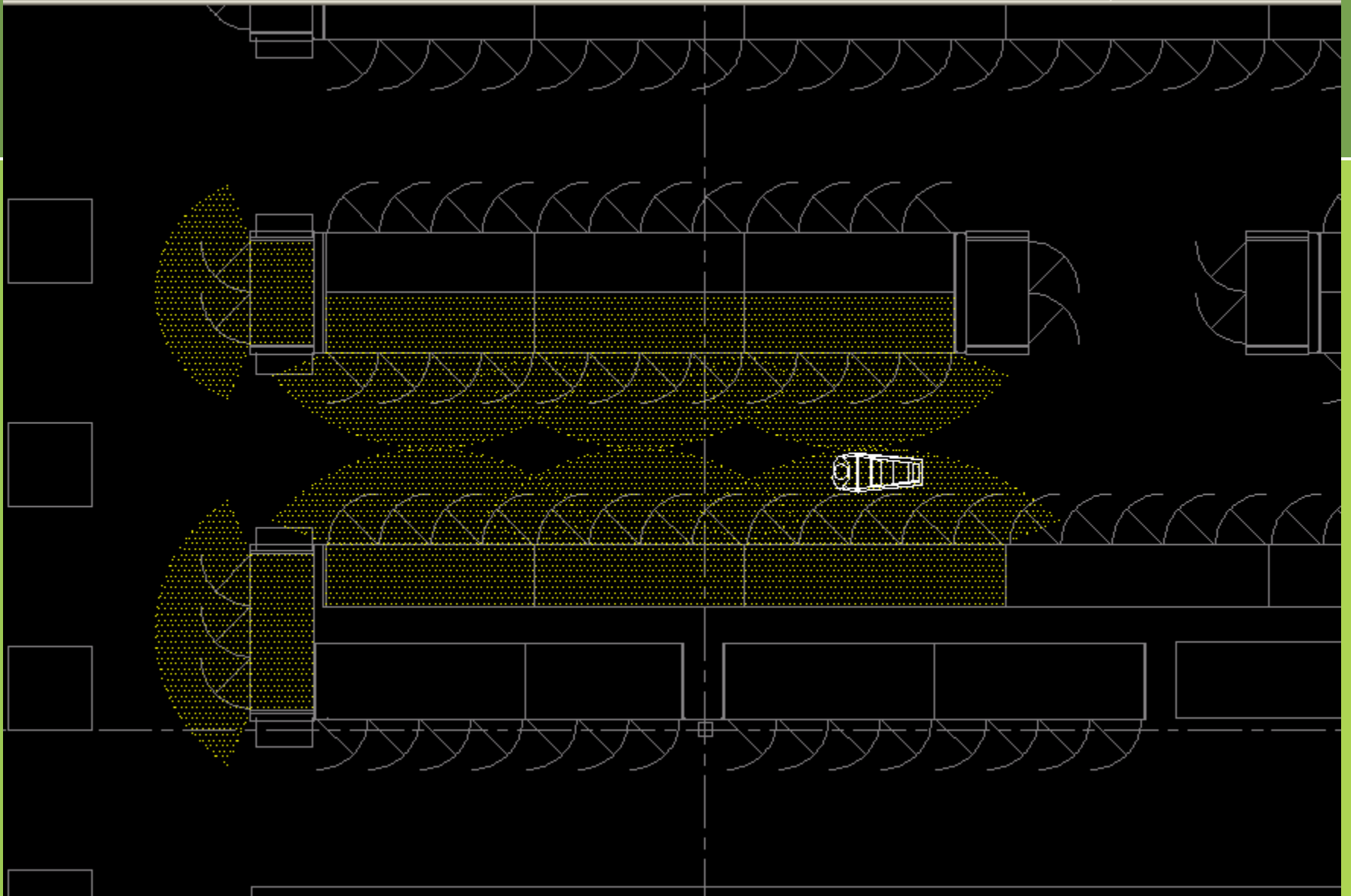




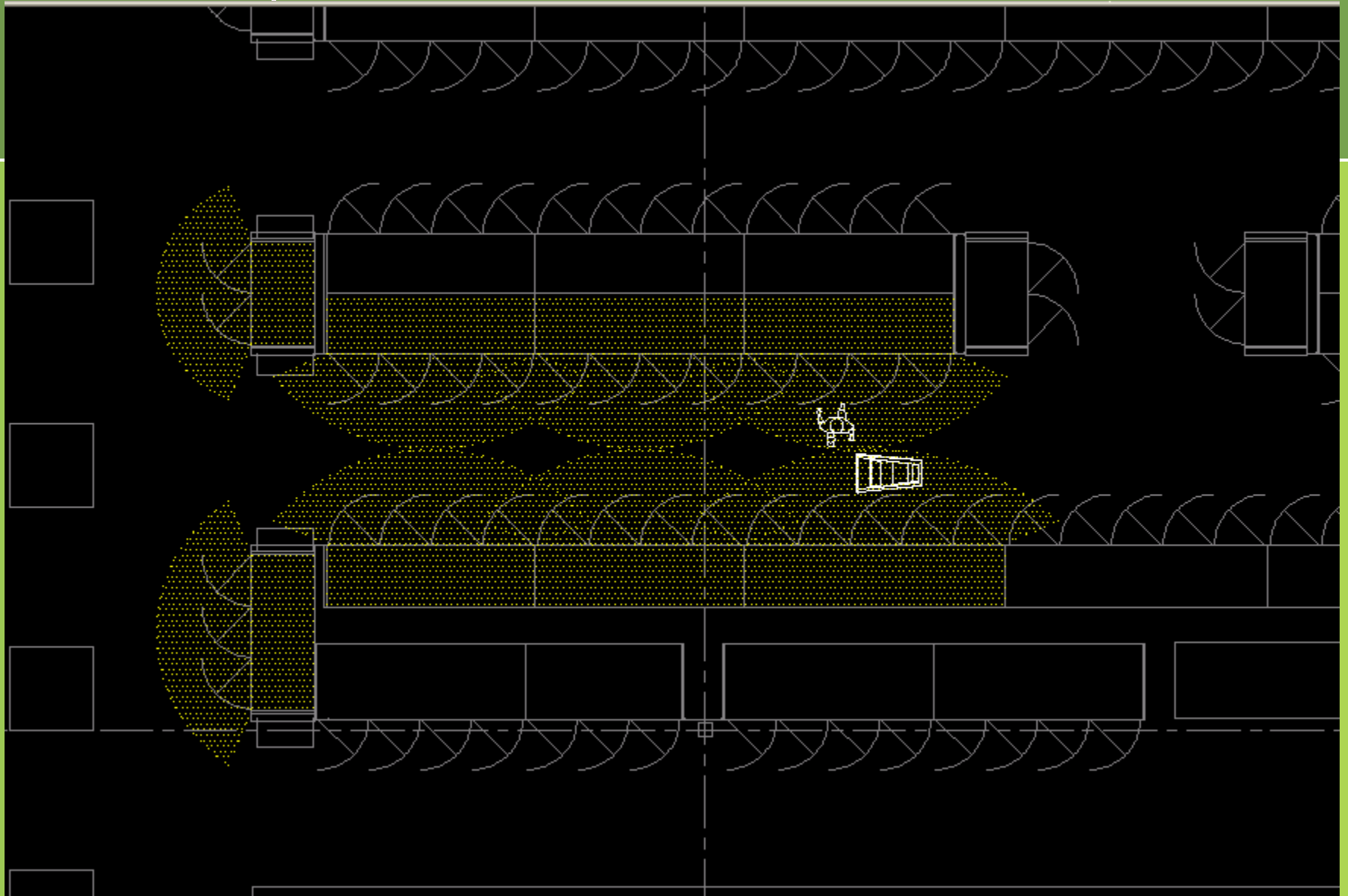
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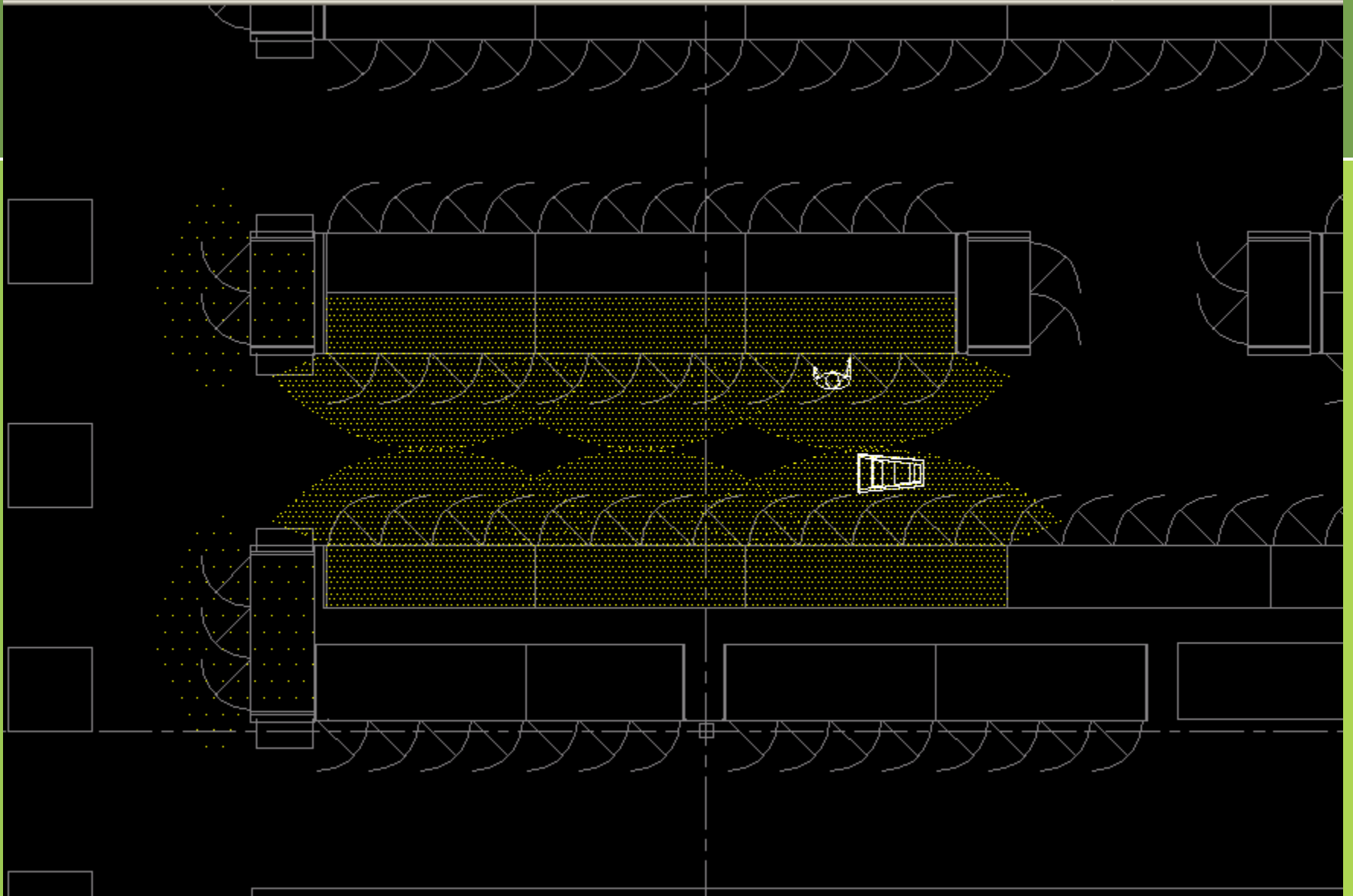


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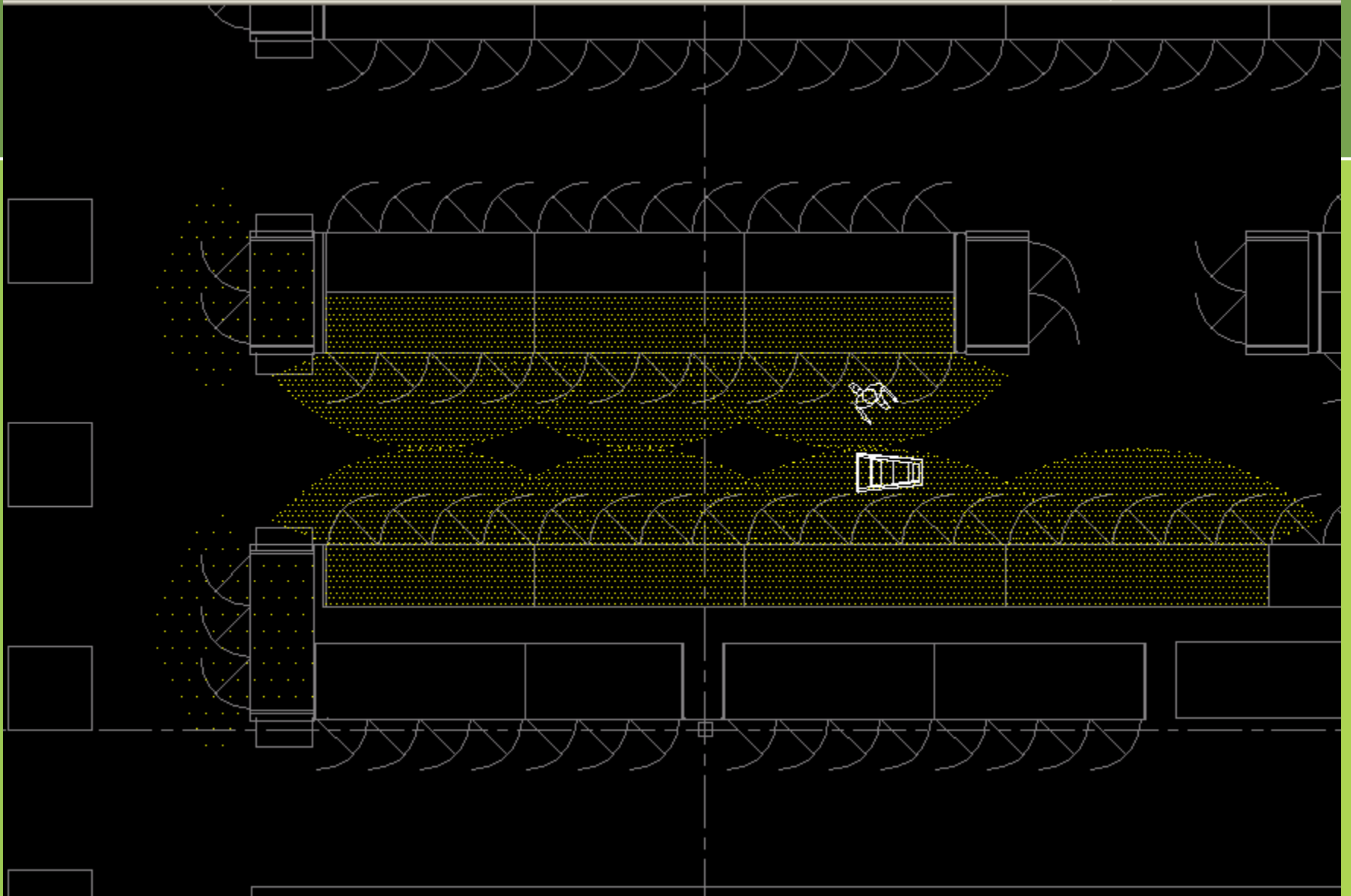


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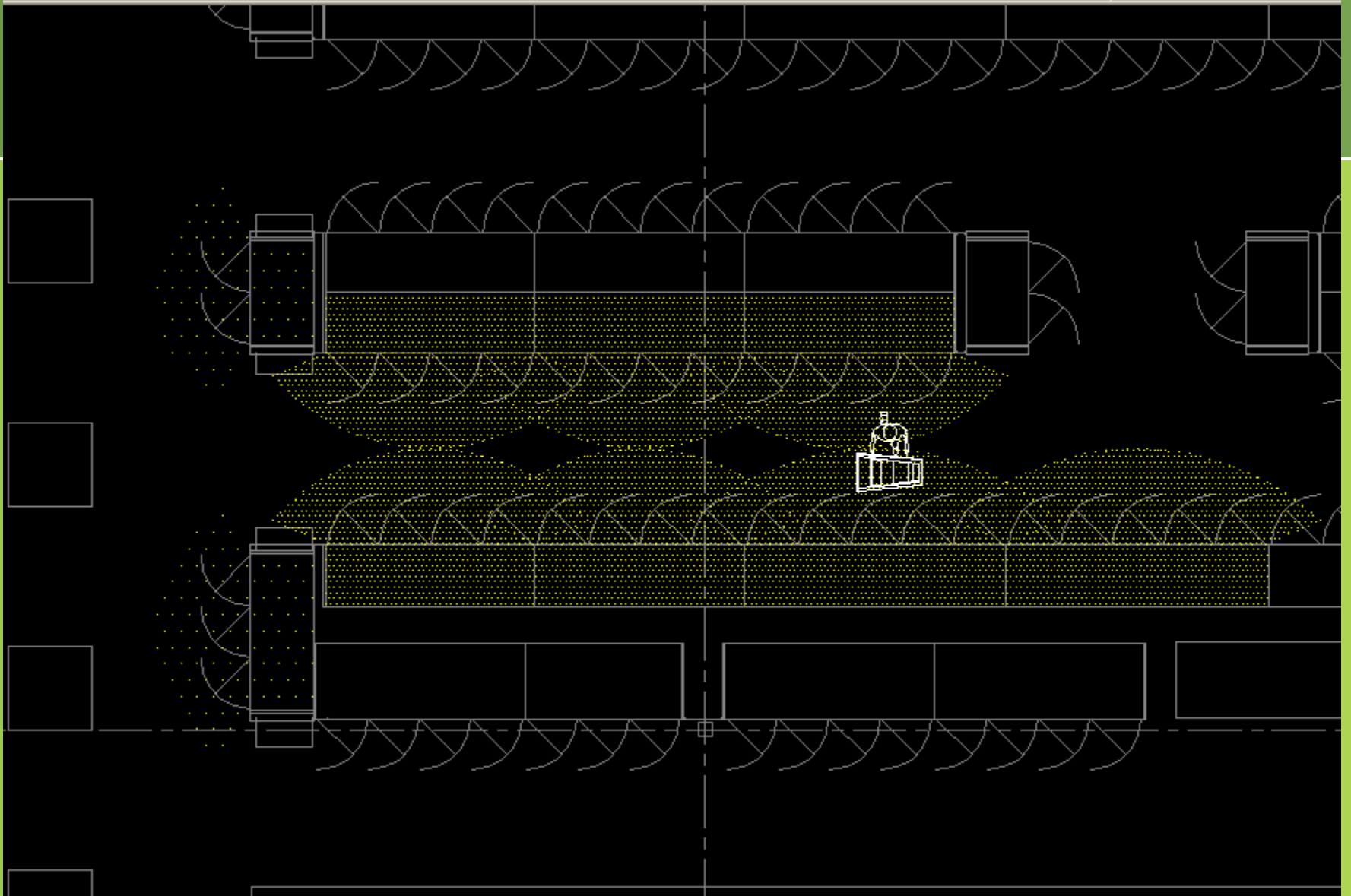




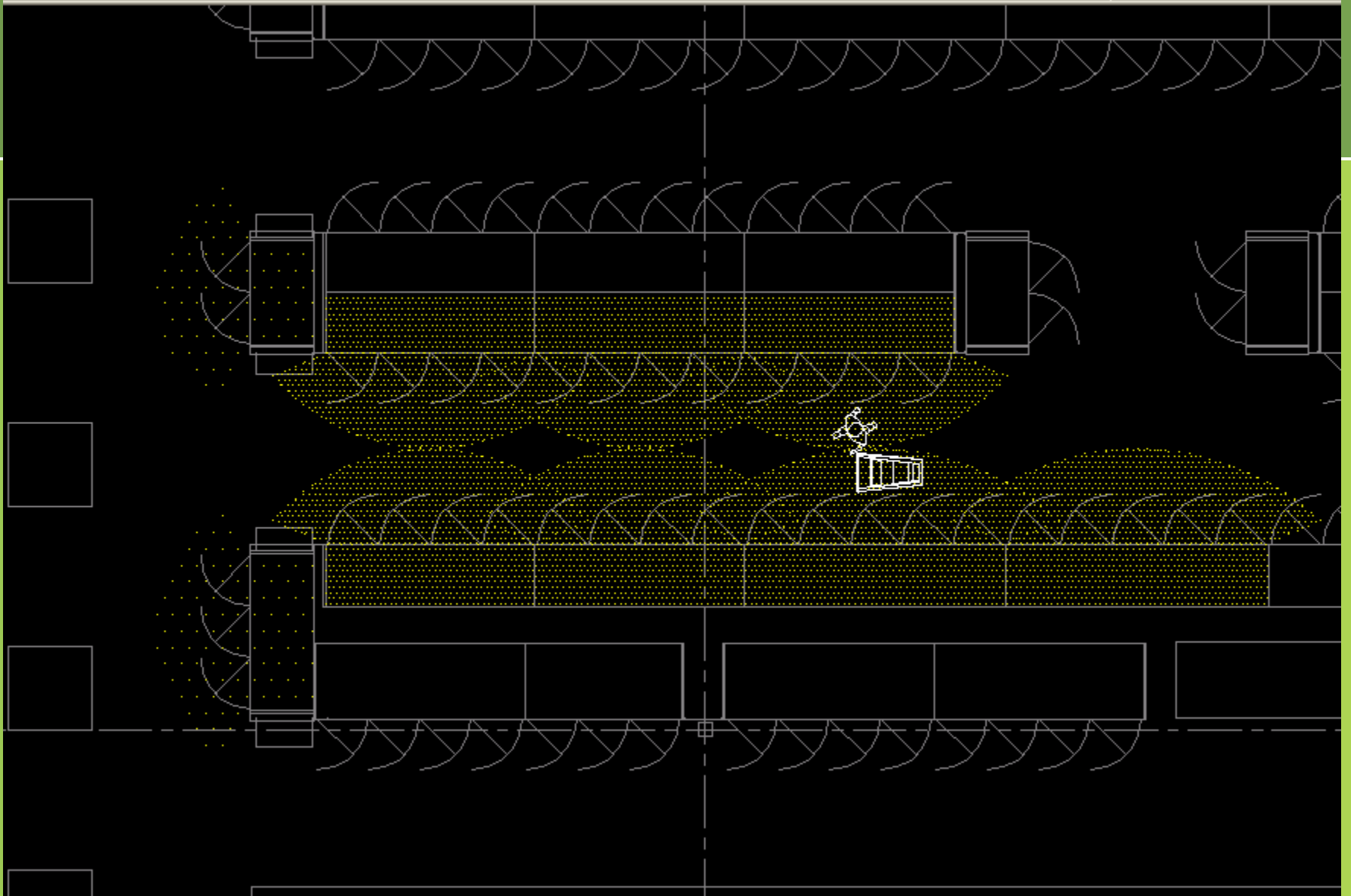
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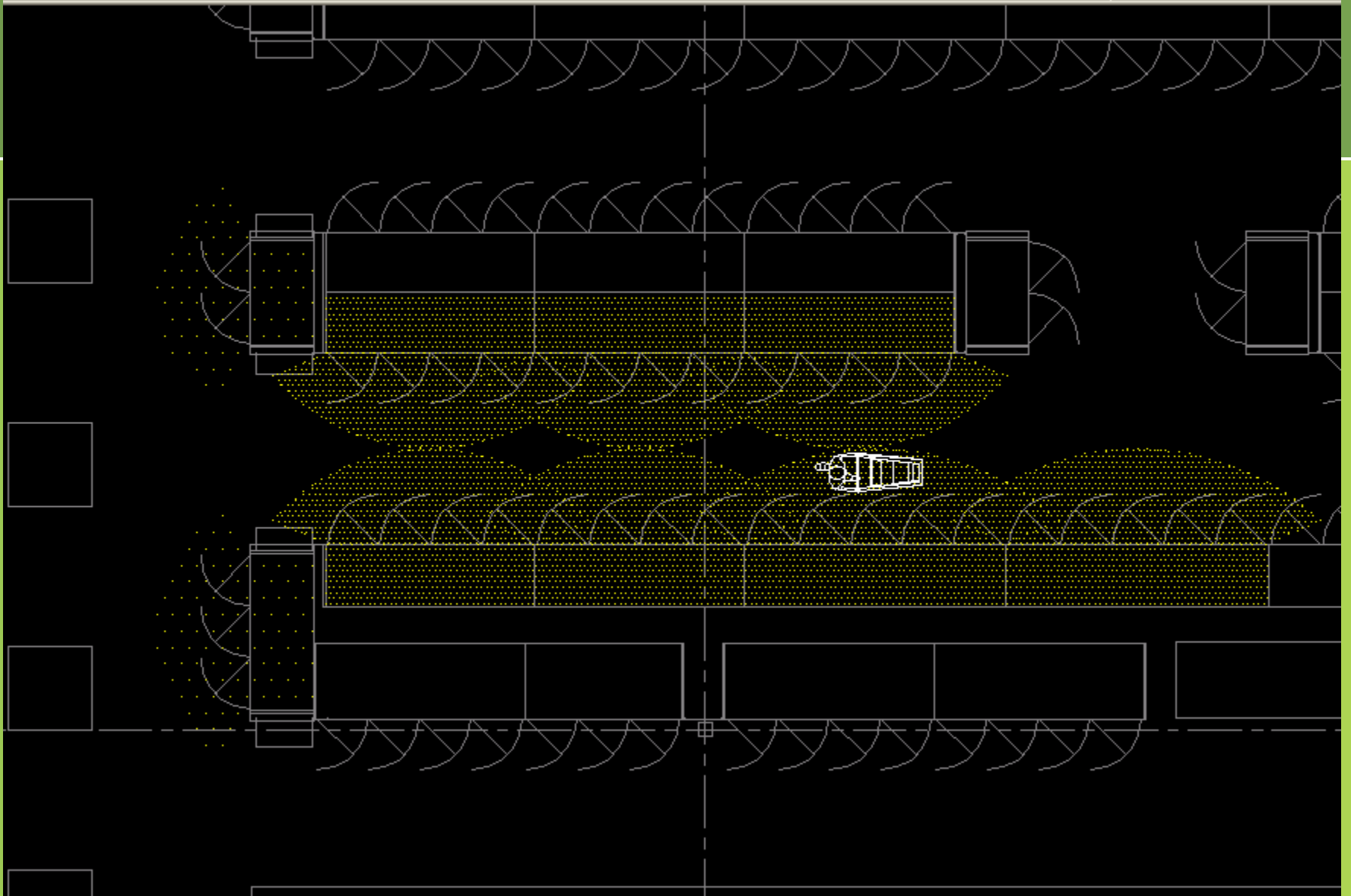


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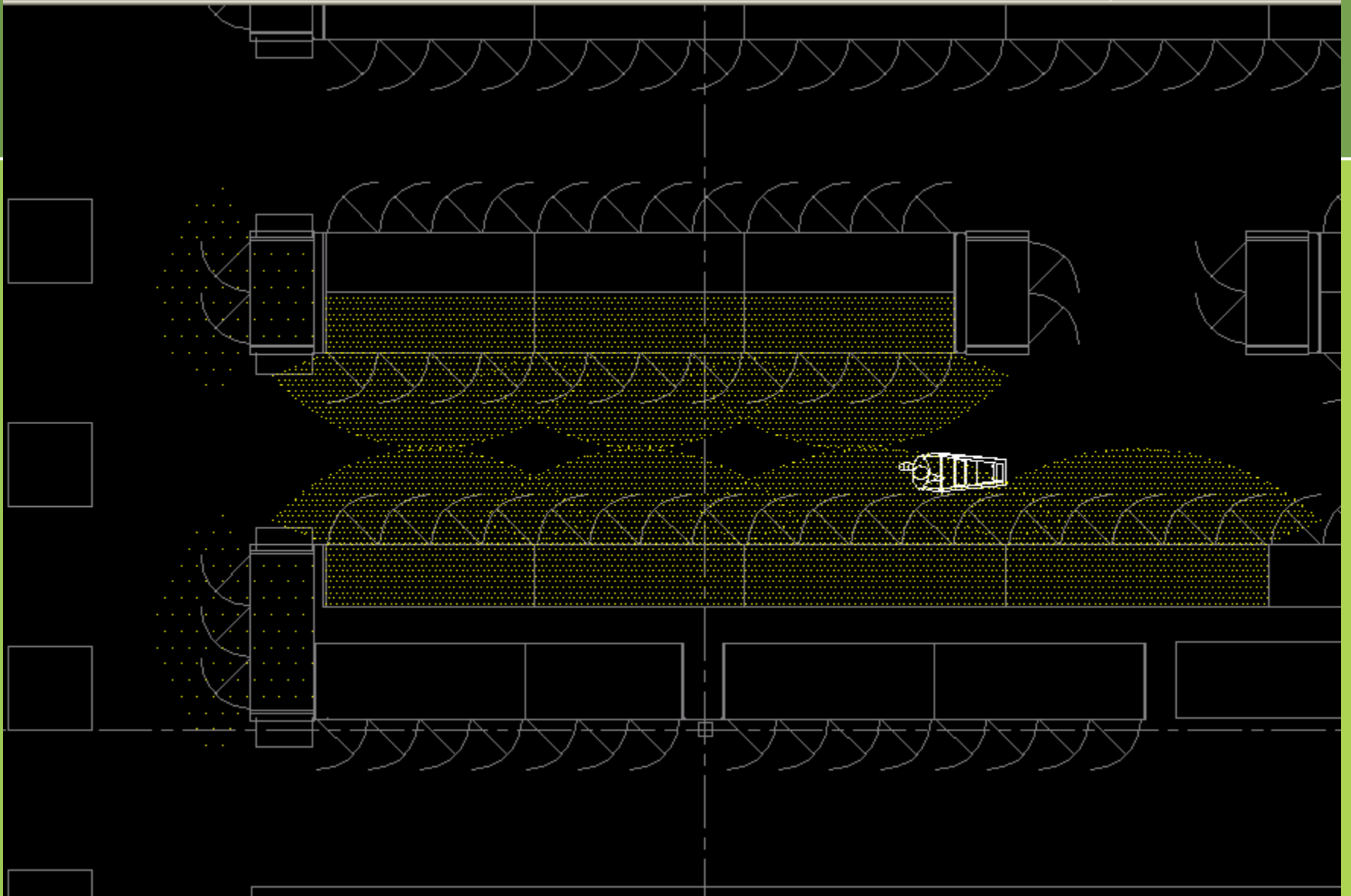


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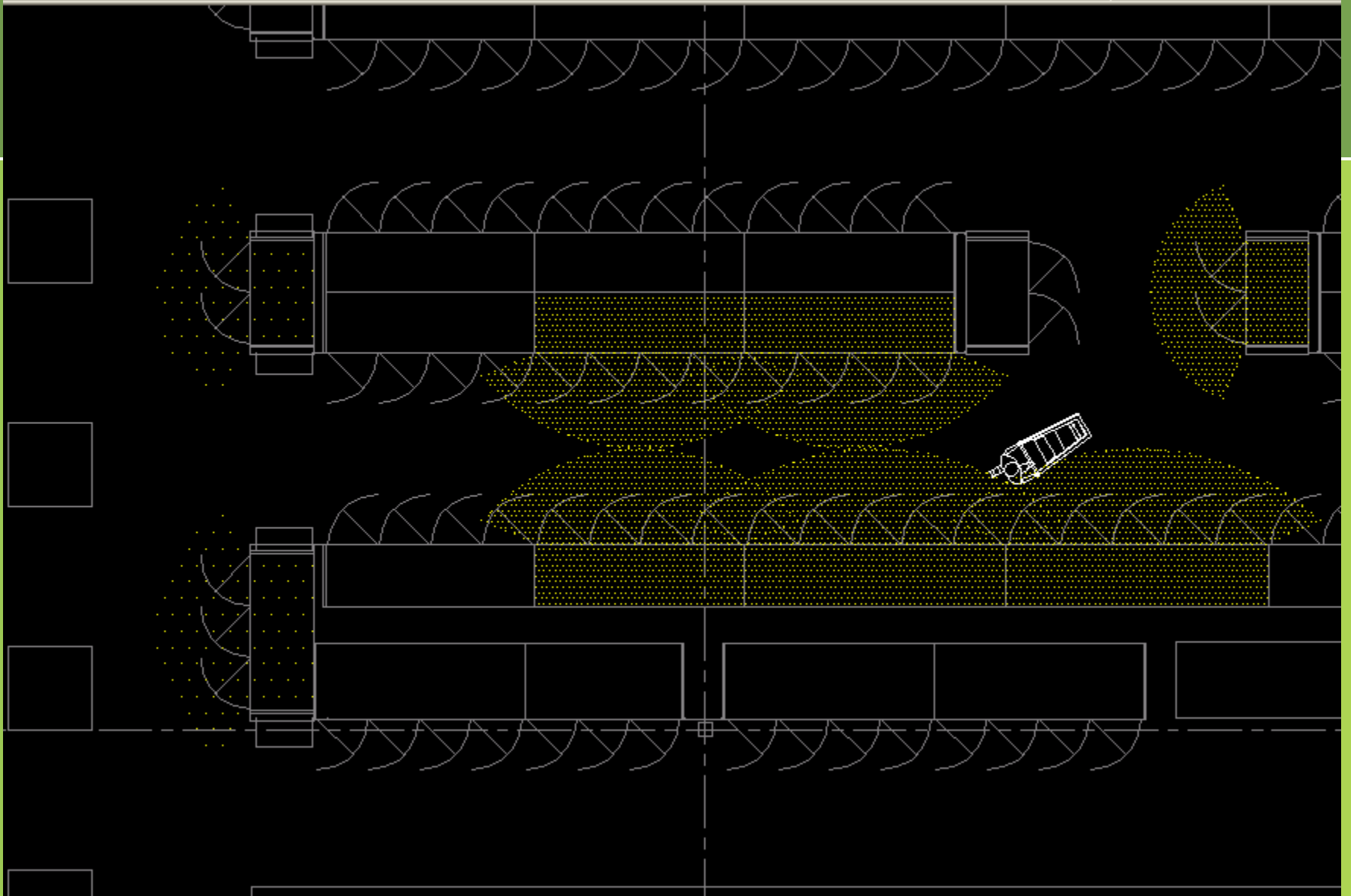




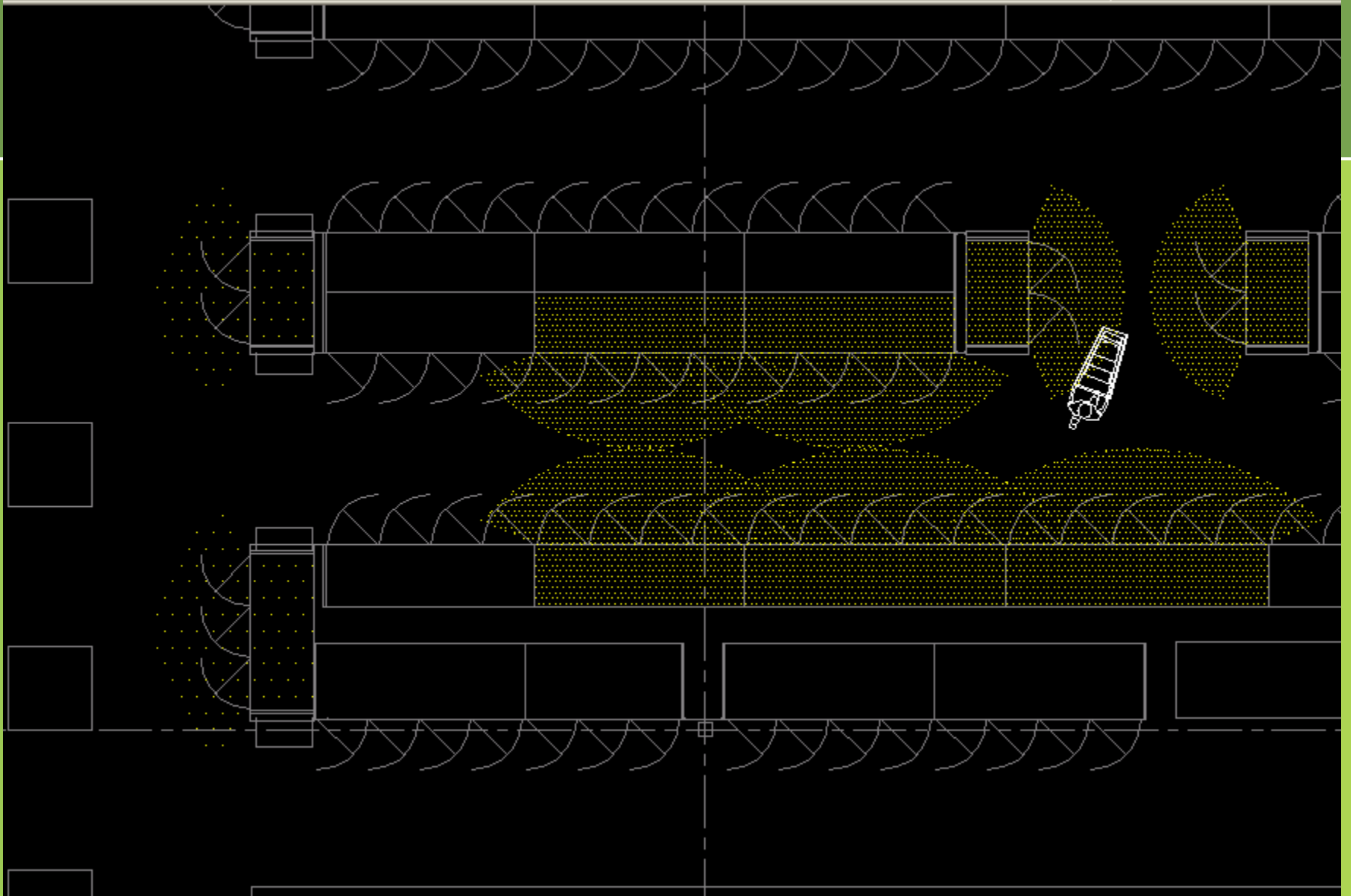
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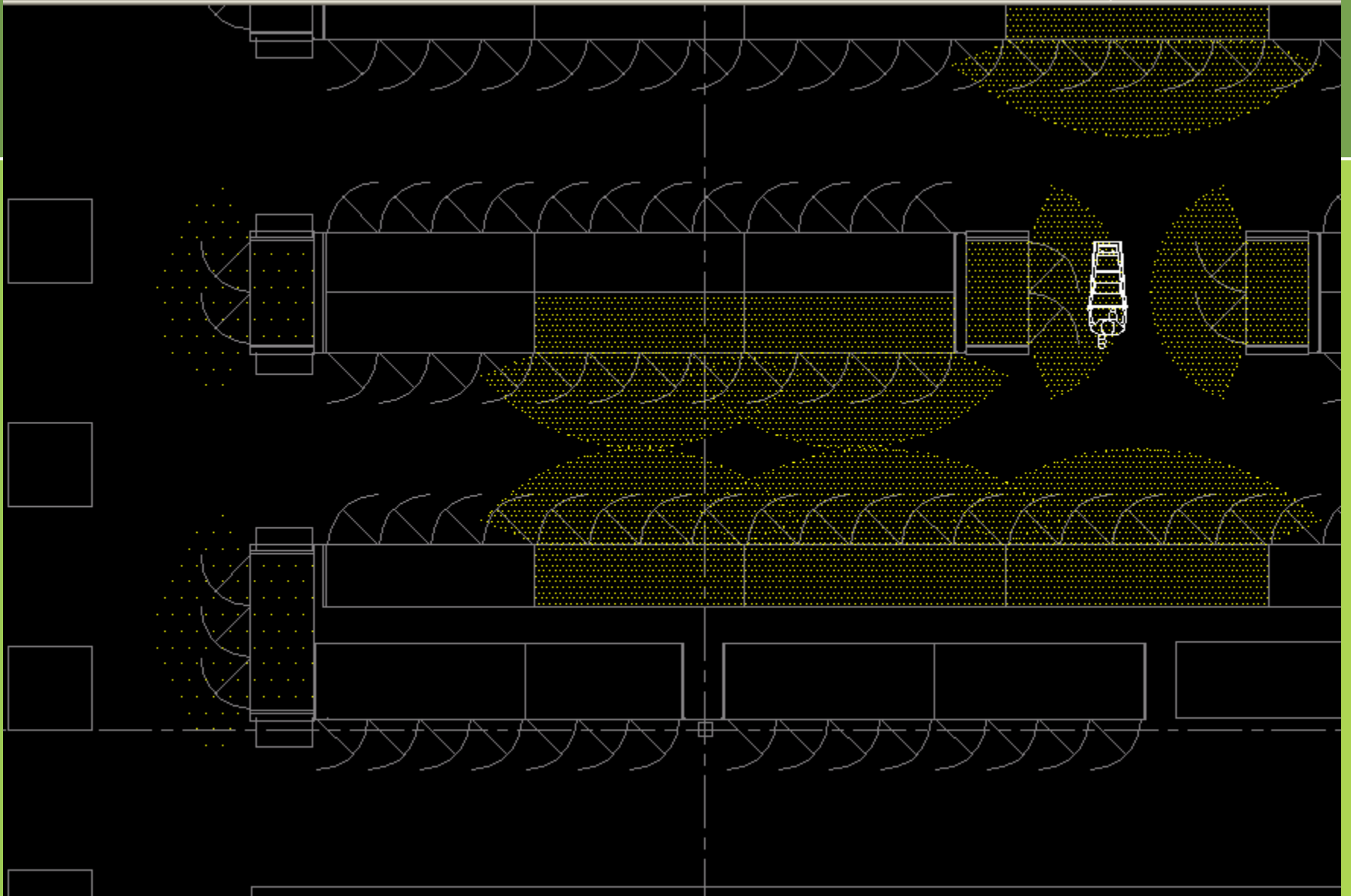


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**Corporate Strategy & Business Sustainability**





**Corporate Strategy & Business Sustainability**







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# **Future Efficiency Items**

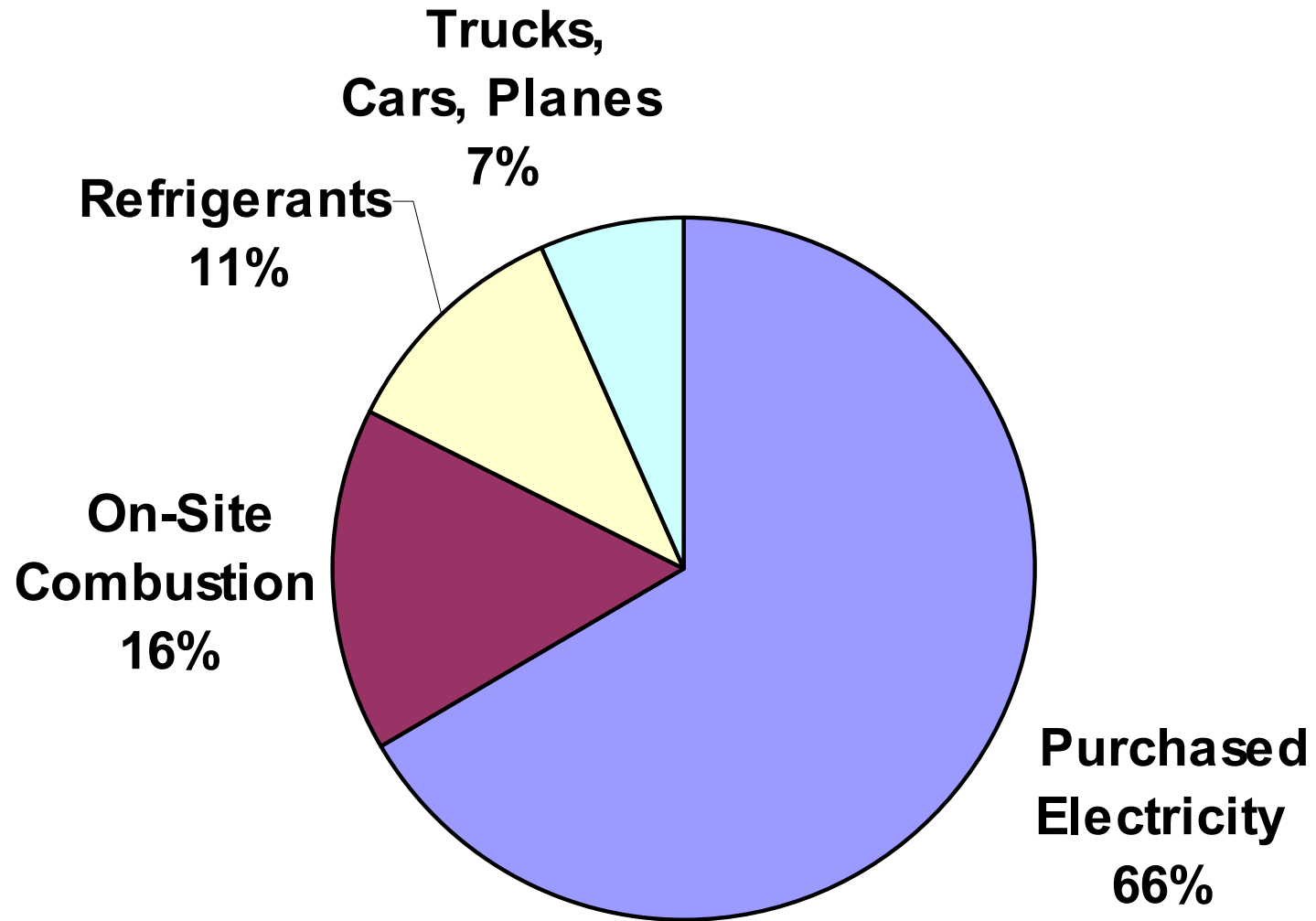
- **Interior LED Lighting**
- **Additional Doors on Refrigerated Cases**
- **Variable Speed Fans/Motors (HVAC)**
- **Variable Speed Fans/Motors and floating Pressures (Refrigeration)**
- **Emerging HVAC Technologies**
- **Emerging Refrigeration Technologies (CO2 Secondary Loop)**

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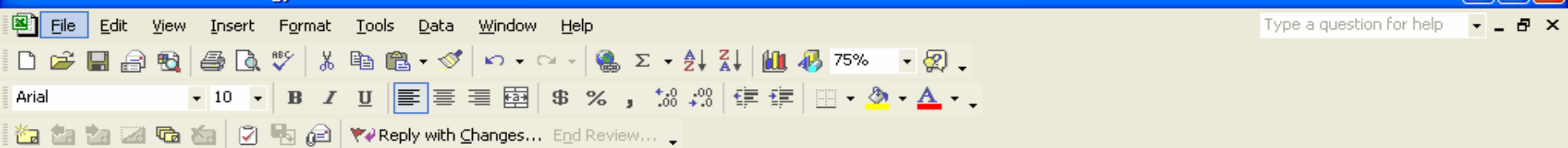
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A38		1. Implementation plan based on new & relocation 5yr plan for supercentre, superstore and small town formats only (George, Living & Essentials non-food formats excluded)													
UK		Per Store Estimated Data						Implementation Plan - Target Number of Stores Completed per Year							Total Stores Completed
Initiative Description (HVAC, Refrigeration, Lighting, etc.; include brief scope)		Target Format (supercenter, dept store, grocery, etc.)	Number of Stores (that initiative applies)	Projected Energy Reduction (% per store)	Projected Energy Savings (average £UK per store)	Estimated Capex Required (average £UK per store)	Simple ROI (per store in years)	2006 Total Stores Completed	2007 Total Stores Completed	2008 Total Stores Completed	2009 Total Stores Completed	2010 Total Stores Completed	2011 Total Stores Completed	2012 Total Stores Completed	
Refridgeration#1: trim heater controls, pack controllers, condensor controls, ecommissioning, optimisation & d/c fan motors		All excl. non-food formats (see note)	300	2.0%	£ 5,600	£ 5,600	1.00	300							300
Refridgeration#2: L.E.D lighting, full-glass doors, removal of undershelf lighting (rollout with remodels)		All remodel stores	126	5.0%	£ 20,000	£ 20,000	1.00	1	25	25	25	25	25	25	126
HVAC#1: variable speed drives (VSDs) on extract systems, VSDs on larger air-handling units, ecommissioning		All excl. non-food formats (see note)	300	1.0%	£ 3,000	£ 12,000	4.00	180	120						300
HVAC#2: adjust store heating and cooling parameters		All excl. non-food formats (see note)	300	1.0%	£ 3,000	£ 500	0.17		300						300
Energy Management: metering, monitoring & targeting, colleague awareness		All excl. non-food formats (see note)	300	2.0%	£ 6,000	£ 10,000	2.00	50	250						300
Lighting#1: reduce light levels during night-time/ low occupancy, remove H&B shelf lighting, retrofit lighting controls to offices/ external canopies, ecommissioning lighting controls		All excl. non-food formats (see note)	300	1.8%	£ 5,000	£ 10,000	2.00	300							300
Lighting#2: replacement of inefficient lighting systems (eg. highbays, T12s etc)		Stores with old lighting systems	70	5.6%	£ 14,000	£ 80,000	5.71	10	10	10	10	10	10	10	70
Renewables: wind turbines, load management & tbc depending on economic evaluation of renewables		TBC depending on new store trials	300	5.0%	£ 15,000	£ 300,000	20.00					100	100	100	300
Wind Turbines (Distribution Centres): 6 * 2MW/turbines at 5 selected DCs		DCs	5	2.0%	£ 300,000	£ 1,700,000	5.67		6						6

Ready



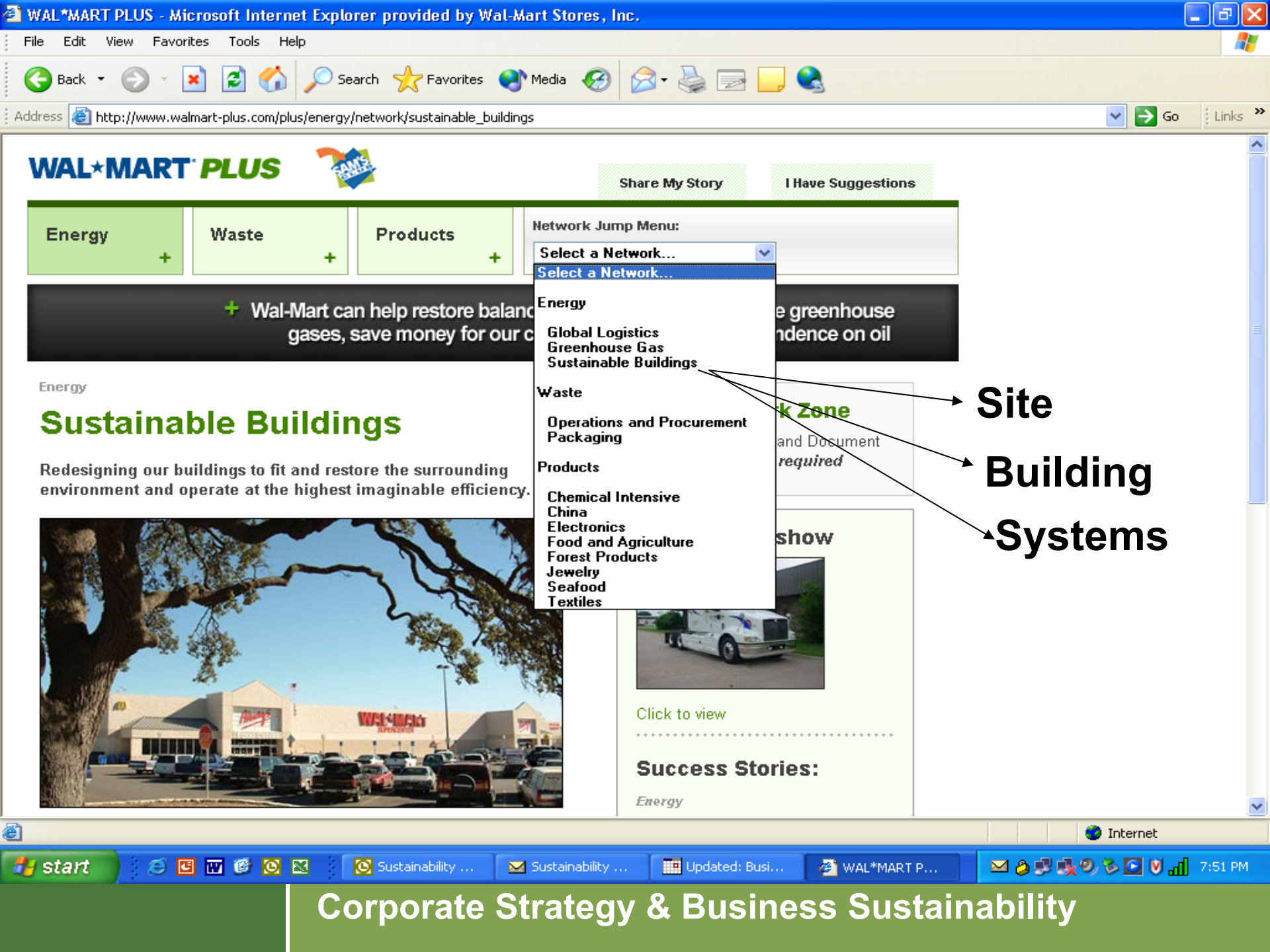


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# Goals

- **20% Energy/GHG reduction in existing stores within 7 years**
- **30% Energy/GHG reduction for new prototype within 4 years**
- **Other???**

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WAL\*MART PLUS



Share My Story

I Have Suggestions

Energy

Waste

Products

Network Jump Menu:

Select a Network...

Select a Network...

Energy

Global Logistics  
Greenhouse Gas  
Sustainable Buildings

Waste

Operations and Procurement  
Packaging

Products

Chemical Intensive  
China  
Electronics  
Food and Agriculture  
Forest Products  
Jewelry  
Seafood  
Textiles

Energy

## Sustainable Buildings

Redesigning our buildings to fit and restore the surrounding environment and operate at the highest imaginable efficiency.



greenhouse  
dependence on oil

Zone

and Document  
required

show

Click to view

Success Stories:

Energy

Site  
Building  
Systems

Internet

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# **Possible Future Initiatives**

- **Rainwater Harvesting**
- **Domestic Water Conservation**
- **Construction Debris Recycling**
- **Increase in Recycled Products**
- **?**
- **?**

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# Recycled Plastic Baseboard and Chair Rail



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**#3 15% F  
Fly Ash**



**#5 22.5% C  
Fly Ash  
50% Recycled  
Aggregate**



**#8 30% C  
Fly Ash**

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**Tire & Lube Express →**

**1-Hr. Photo**

**Pharmacy**

**Optical**



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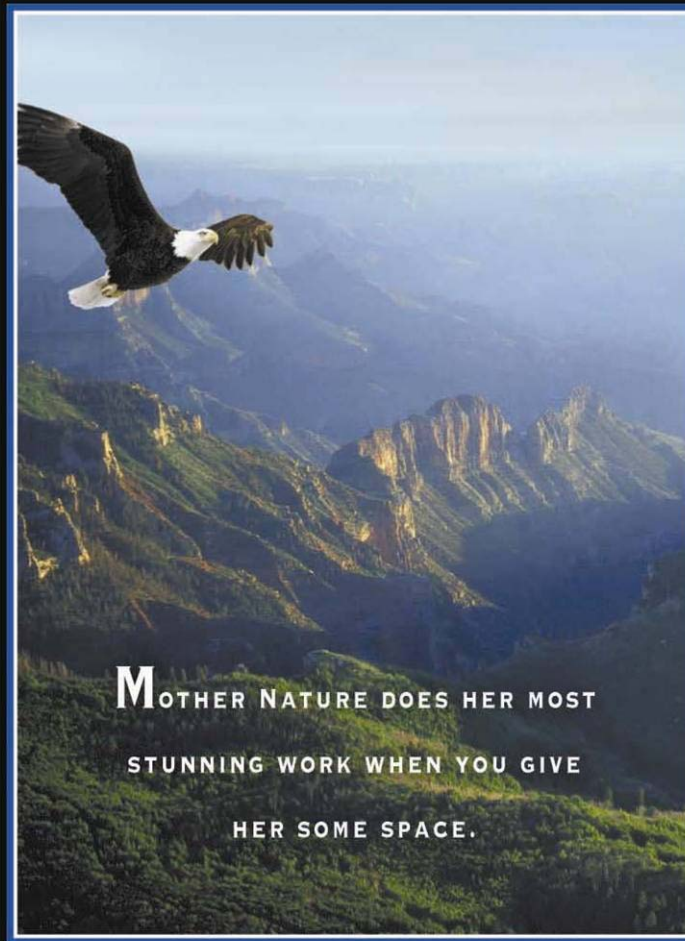








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**M**OTHER NATURE DOES HER MOST  
STUNNING WORK WHEN YOU GIVE  
HER SOME SPACE.



"Wal-Mart is making history today toward protecting and preserving America's natural habitats. Wal-Mart's *Acres For America* program will conserve an acre of natural habitat for every acre of land Wal-Mart uses to develop facilities. That's every developed acre of land Wal-Mart owns today and will build on for years to come. Wal-Mart is helping protect our natural resources so you, your kids and your grandkids can enjoy more wildlife and more natural areas. Wal-Mart is the first company to tie its footprint to land conservation, and we are proud to partner with Wal-Mart to build this premier land stewardship model."

— John Berry, Executive Director, National Fish and Wildlife Foundation



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ACRES *for* AMERICA

[www.walmartfacts.com](http://www.walmartfacts.com)

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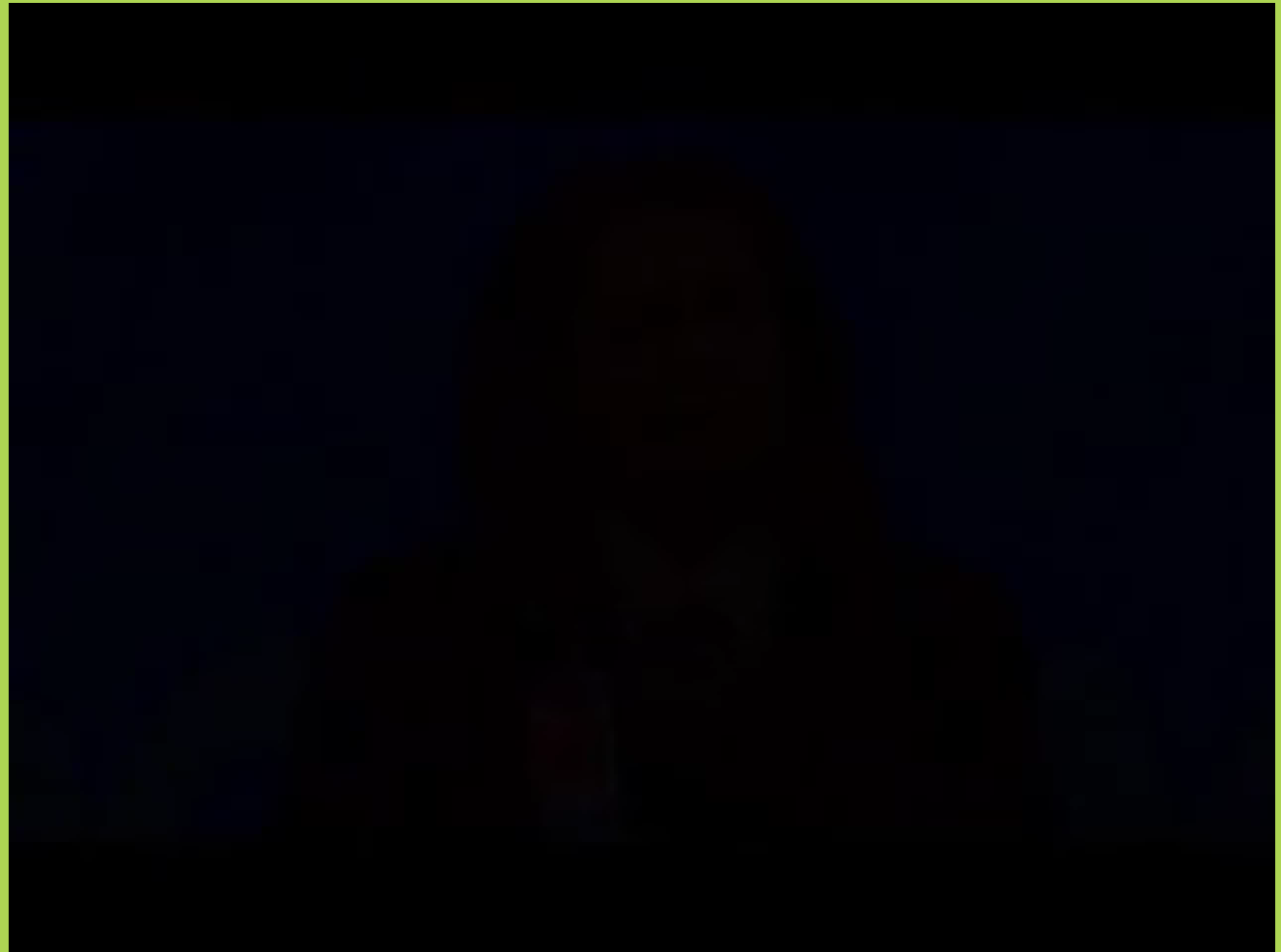
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# **How Big is this?**

- **HVAC**
- **Refrigeration**
- **Lighting**

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**Thank you**

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